

## CHAPTER XIII.

### URBAN MANUFACTURES.

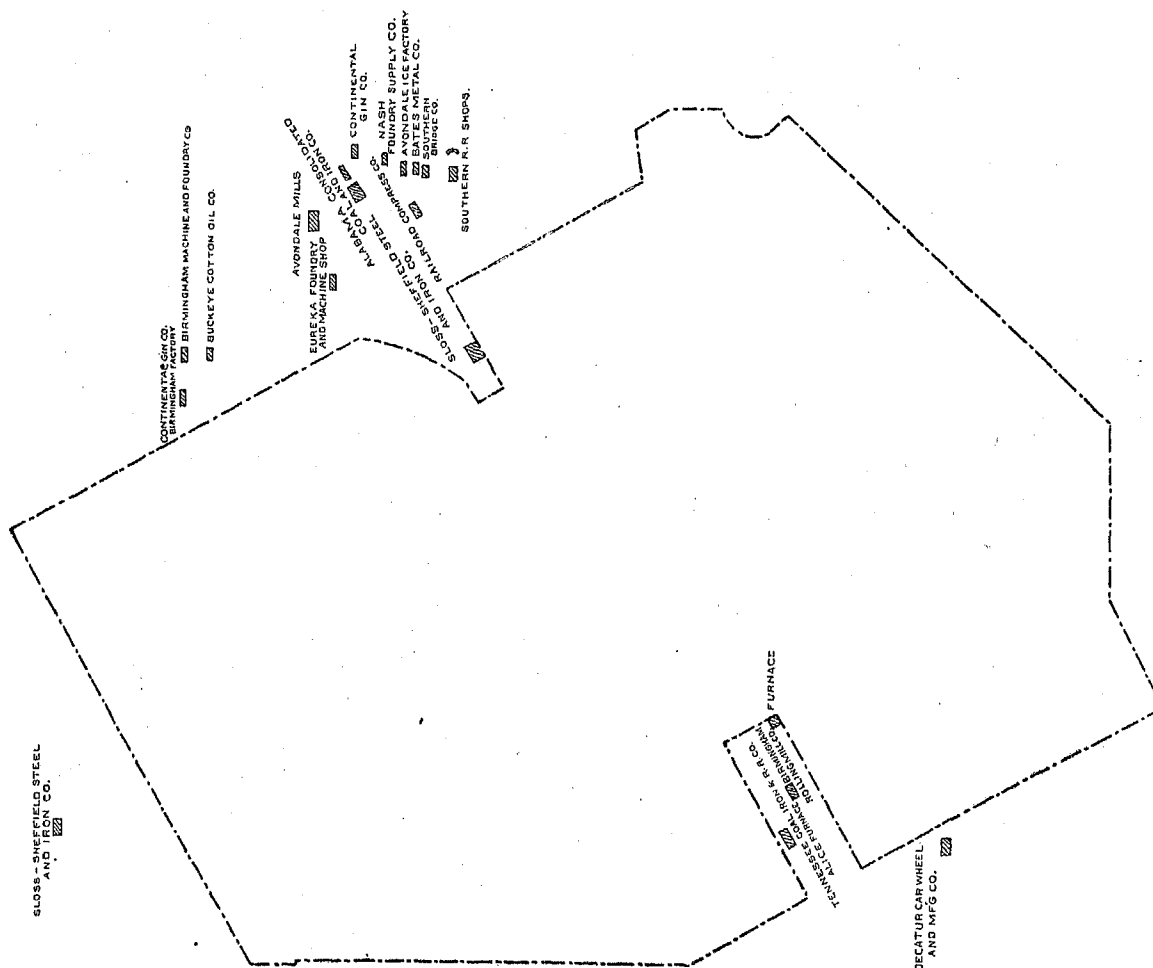
*Limitation of the statistics.*—The censuses of urban manufactures have been uniformly confined to the incorporated political unit, whether called city, borough, village, or town, and only establishments located within the corporate limits of such political units have been included. For this reason the statistics fail to give an absolutely accurate idea of the actual extent and importance of urban manufactures, as in many instances plants situated just outside of these limits are owned and operated by residents of the city, their capital is drawn from the city, their business office is located there, and some or all of the employees reside in the city. Moreover, the corporate limits of some cities have been extended so as to include the important manufacturing suburbs, while the territory of others has remained practically stationary, although manufacturing suburbs have developed which would greatly increase the industrial importance of the city. It would be impossible, however, to establish a line of separation which could be extended or contracted, according to the importance of the establishments and their distance from the city, and the corporate limit in spite of its defects is the only line of demarcation that is capable of uniform application.

There are various factors conducing to the conditions just referred to as resulting in inadequacies in the presentation of statistics for urban manufactures. For local reasons, such as exemption from taxation and sanitary or other restrictions on methods of manufacture, manufacturers may consider it expedient to locate their factories just outside of the city, where they will escape these restrictions and at the same time obtain the advantages afforded by an urban location. For similar reasons it seems probable that the corporate limits of some municipalities have been changed, or were originally planned, so as to exclude localities containing certain establishments. In some instances factories located virtually in the heart of the city, so far as the surroundings are concerned, are nevertheless excluded from the statistics for urban manufactures because of the arrangement of the city boundary. Such conditions are illustrated by the following diagrams, showing the boundary lines for Birmingham, Ala., Columbus, Ohio, Nashville, Tenn., and Pueblo, Colorado.

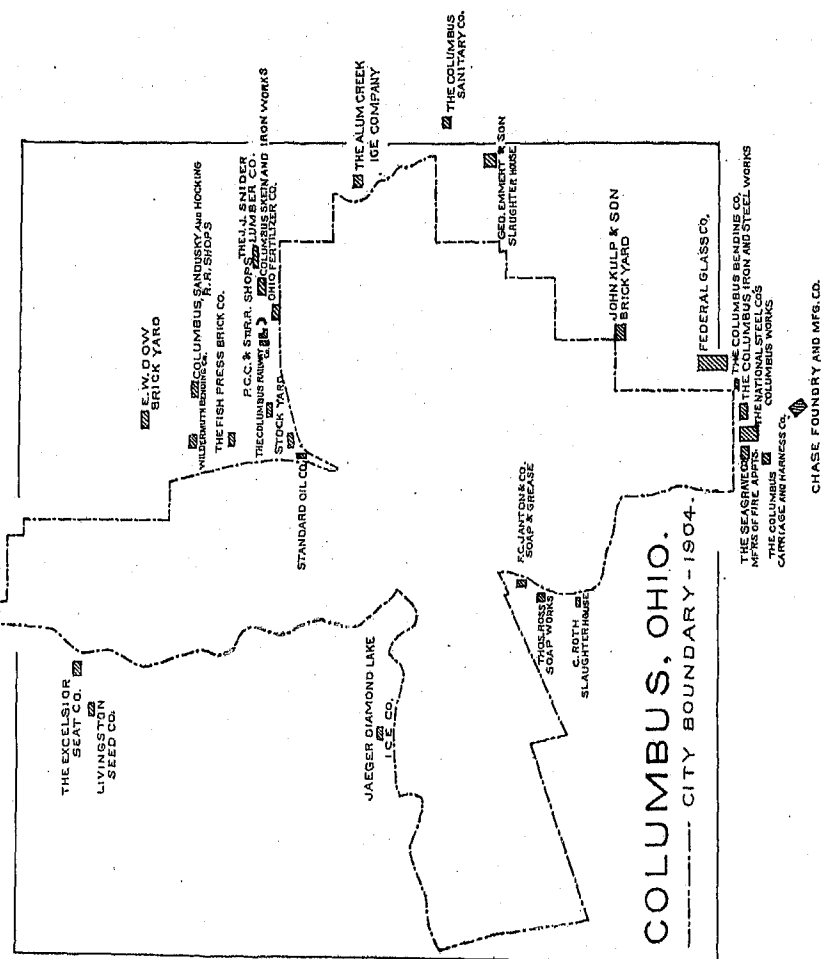
From the location of the manufacturing plants surrounding these cities it is fair to presume that either they were established after the corporate limits of the cities were fixed and purposely placed just without the boundaries within which the laws of the cities were operative, or else extensions of the boundary lines of the cities were planned so as to exclude existing factories, in order that they might continue to enjoy privileges and exemptions which would have been denied them if they had been included in the cities by such extension of the corporate limits. In either case the situation of the factories renders it impossible to present by means of political boundaries an adequate statistical measure of the extent of manufactures properly assignable to the cities. In addition, cities that have recently annexed territory have raised their relative standing as industrial communities out of proportion to their actual increases in manufactures; while on the other hand the manufactures immediately surrounding other cities have increased rapidly, although as the corporate limits of these cities have not been extended, their relative importance has remained stationary or has decreased. Changes in the limits of some cities, and the difficulty of obtaining information concerning the exact location of factories situated close to the boundary line, have also probably resulted in some errors in the assignment of establishments to the urban or the rural districts of the country, but the rule indicated above has been uniformly applied, and the percentage of error, if any, has but slight effect on the totals.

At the census of 1900 the foregoing defects were corrected in part by a separate presentation of the statistics for all establishments in the counties in which the principal cities were located, and in some instances by a combination of the totals for two or more adjoining counties. Even this arrangement was not entirely satisfactory, as in some cases the county line divided manufacturing communities, but it afforded the advantage of a wider grouping and resulted in a fuller, if still inexact, presentation of the statistics for urban districts. For the reasons given on page xxx, however, the tabulation by counties was abandoned at the census of 1905.

GLOSS - SHEFFIELD STEEL  
AND IRON CO.



THE AMERICAN SEWER PIPE CO.



BIRMINGHAM, ALA.  
 \* - - - - CITY BOUNDARY - 1904

DIAGRAM 23.

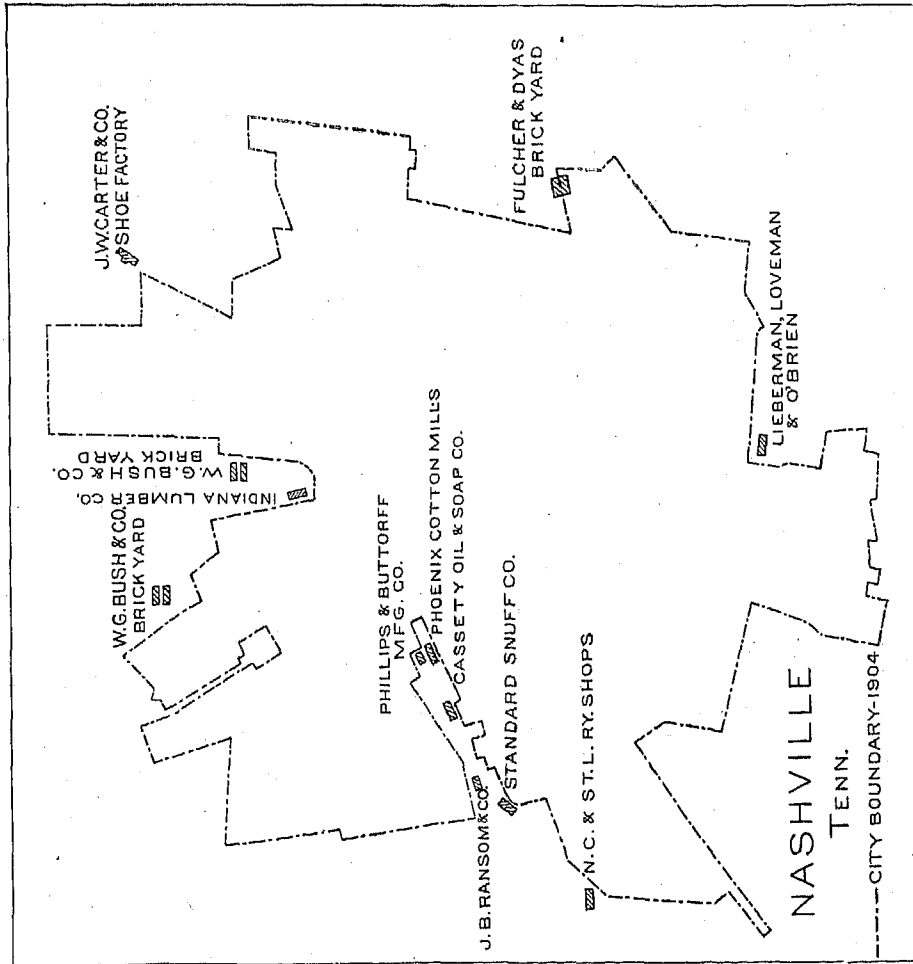
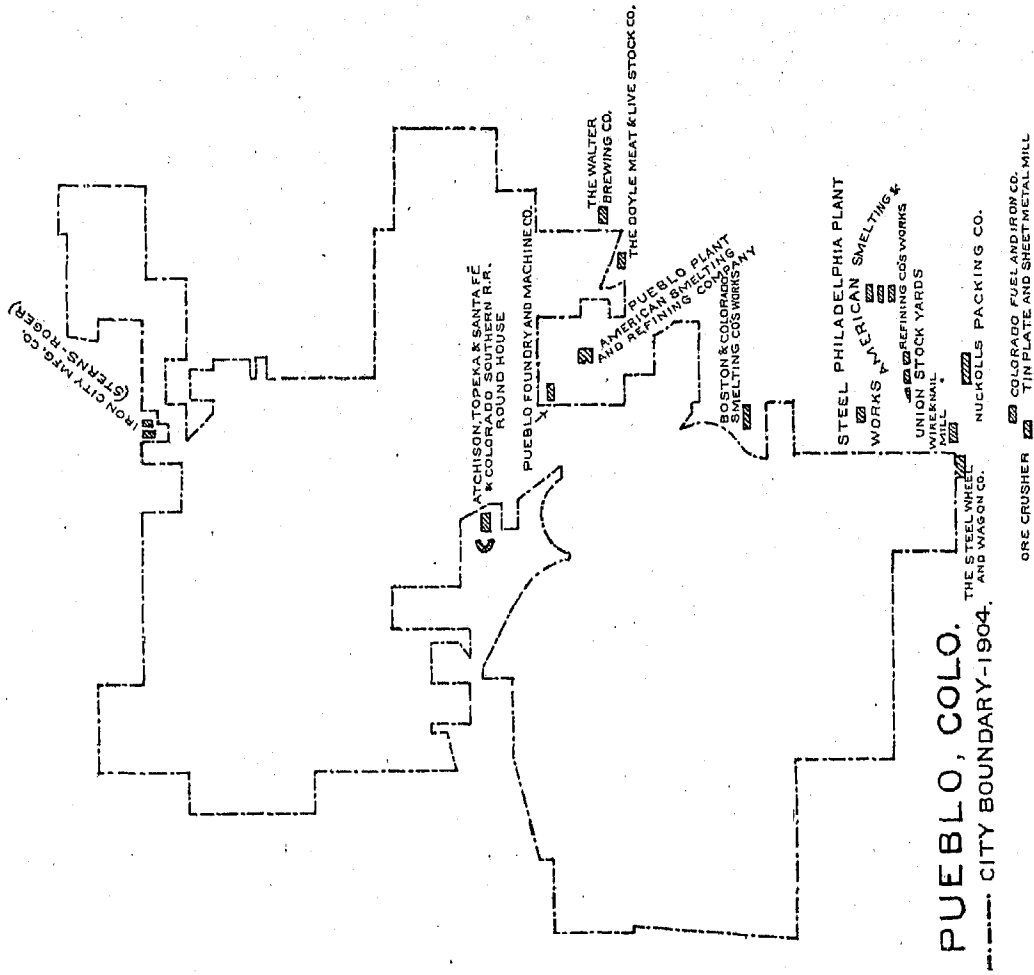
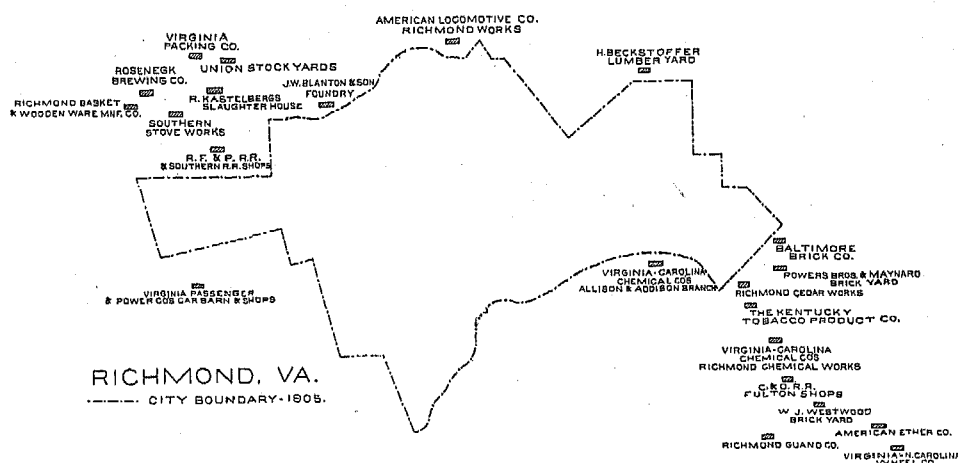


DIAGRAM 24.



## MANUFACTURES.

DIAGRAM 25.



*Special canvass of cities.*—The census of manufactures for cities has been a special feature of the field-work at each census since 1880, when 279 of the principal cities were canvassed by agents appointed especially for the purpose, although the statistics were published separately for only 100 cities. At the census of 1890 1,042 cities and towns were canvassed by special agents, of which the totals for 165 were published separately. At the census of 1900, 1,340 cities and towns were canvassed by such employees, the totals for all being published separately. The number of cities and towns covered by special agents was increased at each census, because the services of such agents proved to be much more satisfactory than those of the general enumerators who collected reports from manufacturers while enumerating the population.

At the census of 1905 the canvass of the entire country was made by the regular employees of the Office or by special agents, but reports were secured only from establishments conducted under what is known as the factory system, the so-called neighborhood and mechanical trades being excluded. This restriction greatly reduced the number of establishments, and it was found that it would be impossible to publish the statistics for some of the smaller places without disclosing the operations of individual establishments located therein. It was accordingly decided to limit the statistics for urban manufactures to municipalities having a population of at least 8,000 at the census of 1900. It is realized,

however, that in some cases this division is inadequate, since many establishments are operated under urban conditions in smaller communities.

Table ccxxix shows the totals for the 544 places with a population of at least 8,000 in 1900 in comparison with the totals for the rural districts and for the United States for 1900 and 1905.

Since the table compares the value of products at the census of manufactures for 1900 and for 1905, for the places with 8,000 and over in 1900, it is hardly a true indication of the relative importance of the urban manufactures in 1905. Undoubtedly there were a number of places with less than 8,000 inhabitants in 1900 that at the census of 1905 had increased sufficiently to be added to the urban class. Thus, if the figures for the urban class for 1905 included such communities instead of only those that had a population of 8,000 and over in 1900, it is possible that the table would not indicate a loss in the proportion of the total production attributable to the urban communities. The totals for each of the 544 cities and towns are shown separately in Table 17. The reports on the manufactures of the different states and territories, given in Part II of the present report, contain detailed statistics for the cities, showing the percentages of increase in each and also the respective totals in each city for establishments under different forms of ownership. Reference should be made to these reports for further details concerning the statistics of urban manufactures.



# URBAN MANUFACTURES.

cclxvii

TABLE CCXXIX.—COMPARATIVE SUMMARY FOR THE UNITED STATES AND FOR THE URBAN AND RURAL DISTRICTS, WITH PERCENTAGES: 1905 AND 1900.

	UNITED STATES.			URBAN. <sup>1</sup>				
	1905	1900	Per cent of increase.	1905		1900		Per cent of increase.
				Total.	Per cent of United States.	Total.	Per cent of United States.	
Number of establishments.....	216,262	207,592	4.2	113,101	52.3	106,513	51.3	6.2
Capital.....	\$12,686,205,673	\$8,078,825,200	41.3	\$8,566,221,283	67.5	\$6,382,432,475	71.1	34.2
Salaried officials, clerks, etc., number.....	519,751	304,202	42.7	386,713	74.4	280,322	77.0	38.0
Salaries.....	\$574,761,231	\$380,889,091	50.9	\$438,685,154	76.3	\$301,500,295	79.2	45.5
Wage-earners, average number.....	5,470,321	4,715,023	16.0	3,024,829	66.3	3,154,911	66.9	14.9
Total wages.....	\$2,611,540,532	\$2,000,735,799	29.9	\$1,796,277,612	68.8	\$1,417,123,370	70.5	26.8
Men 16 years and over.....	4,244,538	3,635,236	16.8	2,689,883	63.4	2,325,086	63.9	15.7
Wages.....	\$2,266,273,317	\$1,736,847,184	30.5	\$1,521,141,741	67.1	\$1,196,960,707	68.9	27.1
Women 16 years and over.....	1,065,884	918,511	16.0	836,836	78.5	731,101	79.6	14.5
Wages.....	\$317,278,008	\$248,814,074	27.5	\$256,632,754	81.0	\$203,800,579	81.9	26.1
Children under 16 years.....	159,899	161,270	0.9	98,110	61.4	98,724	61.2	0.6
Wages.....	\$27,988,207	\$24,574,541	13.0	\$18,203,117	65.0	\$16,350,084	66.6	11.3
Miscellaneous expenses.....	\$1,455,019,473	\$995,900,225	60.7	\$1,110,261,278	76.3	\$722,298,983	79.8	53.7
Cost of materials used.....	\$8,503,949,750	\$6,577,614,074	29.3	\$5,849,806,532	68.8	\$4,050,459,784	70.8	25.6
Value of products, including custom work and repairing.....	\$14,802,147,087	\$11,411,121,122	29.7	\$10,310,285,063	69.7	\$8,141,364,055	71.3	26.6

	RURAL.				
	1905		1900		Per cent of increase.
	Total.	Per cent of United States.	Total.	Per cent of United States.	
Number of establishments.....	103,161	47.7	101,049	48.7	2.1
Capital.....	\$4,120,044,390	32.5	\$2,596,392,725	28.9	58.7
Salaried officials, clerks, etc., number.....	133,038	25.0	83,880	23.0	58.6
Salaries.....	\$136,076,077	23.7	\$79,379,826	20.8	71.4
Wage-earners, average number.....	1,845,492	33.7	1,560,112	33.1	18.3
Total wages.....	\$815,262,920	31.2	\$592,612,429	29.5	37.6
Men 16 years and over.....	1,554,655	36.6	1,310,150	35.1	18.7
Wages.....	\$746,131,576	32.9	\$539,386,477	31.1	38.1
Women 16 years and over.....	229,048	21.5	187,410	20.4	22.2
Wages.....	\$60,346,254	19.0	\$45,007,495	18.1	34.1
Children under 16 years.....	61,789	38.6	62,552	38.8	1.2
Wages.....	\$9,785,090	35.0	\$8,218,467	33.4	19.1
Miscellaneous expenses.....	\$344,758,195	23.7	\$183,301,242	20.2	88.1
Cost of materials used.....	\$2,654,144,224	31.2	\$1,921,164,200	29.2	38.2
Value of products, including custom work and repairing.....	\$4,401,802,024	30.3	\$3,269,767,067	28.7	37.4

<sup>1</sup> The 544 municipalities having a population in 1900 of at least 8,000.

<sup>2</sup> Decrease.

At the census of 1905 the 544 places with a population of 8,000 or over contained more than one-half of the establishments, and measured by the capital invested, number of wage-earners, wages paid, and value of products, represented about two-thirds of the manufacturing operations of the country. The table appears to indicate, however, that the relative importance of the rural establishments is increasing, since at the census of 1905 they reported a larger proportion of the totals for the United States for the principal items, with the exception of the number of establishments, than at the census of 1900.

Not only do the manufactures of the cities as a whole greatly exceed those of the rural districts, but the operations of the individual establishments in the cities are, as a rule, much more extensive than those of the establishments in the rural districts. This is shown by Table CCXXX, which gives certain averages obtained by dividing the amounts reported for the United States and for the urban and rural districts, respectively, by the number of establishments reported in each case.

TABLE CCXXX.—Average size of establishments in the United States and in the urban and rural districts: 1905 and 1900.

	Census.	United States.	Urban.	Rural.
Capital.....	1905 1900	\$58,062 \$43,259	\$75,740 \$59,922	\$39,938 \$25,694
Salaried officials, clerks, etc., number.....	1905 1900	2 2	3 3	1 1
Salaries.....	1905 1900	\$2,658 \$1,835	\$3,879 \$2,831	\$1,319 \$786
Wage-earners, average number.....	1905 1900	25 23	32 30	18 15
Total wages.....	1905 1900	\$12,076 \$9,683	\$15,882 \$13,305	\$7,003 \$5,805
Miscellaneous expenses.....	1905 1900	\$6,728 \$4,363	\$9,817 \$6,781	\$3,342 \$1,814
Cost of materials used.....	1905 1900	\$39,322 \$31,690	\$51,722 \$43,717	\$25,728 \$19,012
Value of products.....	1905 1900	\$68,445 \$54,977	\$91,160 \$76,435	\$43,542 \$32,368

The extent to which large establishments predominate in the manufactures of the entire United States is illustrated by the statistics given in the chapter on "large and small establishments." It was impractical-

ble to compile statistics for the establishments of different sizes in the cities, but as the large number of small establishments tends to reduce the averages given in the above table, the relative number of establishments in the urban and rural districts, respectively, should be considered in connection with the averages. The averages can be accepted as representing an imaginary establishment based on a combination of reports for factories of various sizes, and only conclusions of the most general nature can be derived from them.

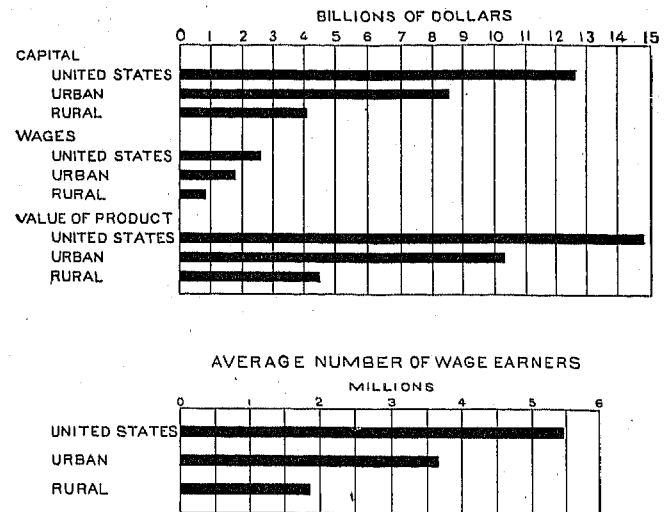
The striking features of the preceding tables are: (1) The large increase in the average amount of capital invested, salaries and wages paid, and value of products per establishment for the United States as a whole, and for the urban and rural districts; (2) the magnitude of the average establishment in the cities, the figures for every item except for capital in 1905 being at both censuses nearly or more than twice as large as those for the average establishment in the rural districts; (3) the larger actual increases in the averages per establishment in the cities than in the rural districts, and the larger percentages of increase in the rural districts.

Although Table ccxxx shows that on the average the urban establishments are larger than the rural, there are many cases, of course, where very extensive plants exist outside of urban limits. The decrease since 1900 in the proportion of capital and value of products shown in Table ccxxix for the urban districts, accompanied by only a slight increase in the proportion of establishments, may indicate that an increasing number of the larger plants are moving to the rural districts, or that a larger proportion of the new and larger factories are being established outside of the city limits, or that the establishments which were located in the rural districts have increased their operations.

The relative importance of urban and rural manufactures is shown most effectively by a graphic presentation, as in the following diagrams. The first presents them relatively to each other and to the totals for the United States at the census of 1905, according to the statistics of capital, wages, and value of products; while the second similarly shows the relative numbers of wage-earners in the 544 cities and towns for which statistics are given separately, in the rural districts, and in the country as a whole.

Accepting the 544 cities and towns included in Table ccxxix as representative of urban manufactures, there has been, except in number of establishments, a slight, though general, decrease in the proportion that urban manufactures constitute of the total for the United States. Of the total capital invested in manufactures, the establishments in the cities reported 71.1 per cent at the census of 1900 and 67.5 per cent at the census of 1905, a relative decrease of 3.6 per cent. While such a large proportional decrease is not shown for any of the other items, there was a decrease of more than 1 per cent for the majority of them.

DIAGRAM 26.—Urban and rural manufactures—capital and wages, and value of products: 1905.



There were but slight changes in the proportions of men, women, and children employed in urban manufactures as reported at the two censuses. The greatest variation is shown for women, the proportion decreasing from 79.6 per cent at the census of 1900 to 78.5 per cent at the census of 1905. The decrease in number of children was greater in the rural than in the urban districts.

The proportional decrease in urban manufactures is due to the more rapid increase in the industries of the rural districts. The urban districts show the largest percentage of increase in number of establishments, but the rural districts reported the highest percentage for all of the other items, the percentages exceeding not only those for the urban districts, but those for the United States as a whole. The percentages of increase for the rural districts are, however, based on smaller amounts than those for the urban, and do not, in any instance, indicate a larger actual increase. For example, the capital for the rural districts increased 58.7 per cent and in the urban 34.2 per cent, but the actual increase in the rural districts was \$1,523,651,665 as compared with \$2,183,788,808 for the urban. The average number of wage-earners for the rural districts increased 18.3 per cent and in the urban districts 14.9 per cent, but the actual increase in the rural was 285,380 and in the urban districts 469,918.

While the totals for urban manufactures as reported at the census of 1905 show substantial increases over the totals for 1900, there has not been an increase in all of the 544 cities and towns. Only 133 cities show an actual increase in all of the twelve items of capital, wage-earners, wages, etc., shown in Table 17. Of these, four cities reported the same number of establishments, and four the same number of children wage-earners at the two censuses; but as the other items in these cities show increases, they have been considered as showing increases in all the items.

Of the cities having a population of 20,000 and over

in 1900, New York shows the greatest increase in value of products and in average number of wage-earners, the increase in value of products being \$353,652,745 and in the average number of wage-earners 76,130. The greatest percentage of increase in value of products—198.2—is shown for Quincy, Mass., and is due almost wholly to the increase in the granite cutting industry, the introduction of iron and steel shipbuilding, and the manufacture of iron and steel bolts, nuts, washers, and rivets. The greatest percentage of increase in average number of wage-earners—152.4—is also shown for Quincy.

The greatest decrease in value of products is that for McKeesport, Pa., and amounted to \$13,004,035. This decrease is caused largely by the elimination at the census of 1905 of certain duplications in the iron and steel industry included in the statistics for the industry as reported at the census of 1900, and is therefore more apparent than real. After McKeesport, Allegheny, Pa., with a loss of \$7,365,106, shows the greatest decrease in this item, due in part to duplications in the iron and steel industry similar to those referred to for McKeesport, but also caused by a falling off in the iron and steel and foundry and machine shop industries. The greatest decrease—3,865—in average number of wage-earners is also shown for Allegheny.

Next to McKeesport, North Adams, Mass., suffered the greatest relative loss in value of products—25.2 per cent—owing to a falling off in the boot and shoe and textile industries. The greatest percentage of decrease in average number of wage-earners was 46.5 for Galveston, Tex., due in part to a lack of complete recovery from the great flood of September 8, 1900.

There were 411 cities for which a decrease was shown for one or more of the twelve items. The following statement gives, for each item, the number of cities reporting a decrease:

*Cities reporting decreases in one or more items: 1905.*

	Number of cities.
Number of establishments.....	172
Capital.....	55
Salaried officials, clerks, etc., number.....	51
Salaries.....	41
Wage-earners, average number.....	109
Total wages.....	55
Men 16 years and over.....	112
Women 16 years and over.....	138
Children under 16 years.....	235
Miscellaneous expenses.....	51
Cost of materials used.....	83
Value of products.....	61

The statistics for manufactures in the entire country indicate that there has been a decrease in the number of children employed, and the above statement shows that more cities show a decrease in this item than in any other.

Portsmouth, N. H., is the only city reporting a decrease for all the items covered by this statement. The general decrease in this city was due primarily to the fact that one large establishment engaged in the

manufacture of boots and shoes at the census of 1900 was not in operation during 1904. Cripple Creek, Colo., reported a decrease in all items except the number of children employed, which was the same at both censuses. The decreases in the manufactures of this city were due apparently to local conditions.

In some cities, while the total for all industries shows a net increase, some of the individual industries have decreased. In some cases the decrease is due to an actual falling off caused by business depression, previous overproduction, or some one of the various other conditions which affect all industries, wherever situated. In other cities it is due to the removal of manufacturing plants outside the corporate limits of the city, or to sections of the United States where raw material is more readily obtained and the products can be more advantageously disposed of; or where labor is more plentiful and power and land cheaper; or where advantage can be taken of other economies of production; or where subsidies are given or immunity from taxation offered.

This shifting of establishments from one section of the country to another in the endeavor to find the locality in which manufacture can be carried on to the best advantage is becoming more prevalent with the increased competition following the rapid extension of manufactures. The consolidation of a number of independent plants under one management and the consequent abandonment of the plants that can not be worked to advantage, is another phase of this general readjustment which has perceptibly advanced or retarded the industries of localities. In addition to these and other economic causes the increase or decrease in certain cities may be due to changes in the kinds of industries enumerated at different censuses or to the more thorough canvass in some cities than in others, while the apparent growth or decline of certain industries in different cities may be caused by changes in the methods of classifying the reports.

In a few cases all the decreases in the various items shown for a given city can be traced to the changes that have occurred in a single industry. On the other hand, an important industry or a number of industries may show a decrease, and yet these decreases may be more than counterbalanced by increases in other industries, with the result that the total for all industries will indicate a general advance. In some cities, where one or two establishments represent a large proportion of the total for the city, the removal of one of these large plants, combined with the changes shown for other industries, has resulted in a large decrease, even though a number of the industries of the city show increases. In order to ascertain the actual conditions it would therefore be necessary to compare and analyze the figures for each industry, but as an analysis of that character would be more extended than the importance of the subject seems to warrant, this discussion is confined prima-

rily to the city totals, only incidental reference being made to the individual industries.

*Tendencies since 1880.*—At the census of 1890 the statistics were shown separately for 165 cities and at the census of 1880 for only 100 cities. The limitation in the number of cities and the omission of the neighborhood and mechanical trades from the census of 1905 renders it impossible to make comparisons which will show with entire accuracy the tendency prior to 1905 toward a more rapid increase in the manufactures of the country outside of the leading cities, with a resulting decrease in the proportion of manufactures in such cities. That such a condition did prevail, however, is indicated by Tables CCXXXI and CCXXXII. Table CCXXXI shows the proportion which the manufactures and population of the 100 cities have formed of the total for the United States at the last four censuses. Table CCXXXII shows the same proportions for the 162 principal cities at the past three censuses.

TABLE CCXXXI.—One hundred principal cities—per cent of totals for the United States: 1880 to 1905.

	CENSUS.			
	1905	1900	1890 <sup>1</sup>	1880 <sup>1</sup>
Number of establishments.....	38.5	38.1	47.2	30.7
Capital.....	51.2	54.8	54.0	49.6
Wage-earners, average number.....	47.8	48.8	54.3	52.4
Total wages.....	50.8	52.7	60.3	58.6
Cost of materials used.....	54.6	56.4	58.0	56.3
Value of products.....	54.6	56.4	60.0	56.2
Population <sup>2</sup> .....	23.5	22.7	21.0	18.2

<sup>1</sup> Includes neighborhood industries and mechanical trades.

<sup>2</sup> For 1905 the population is estimated as of June 1, 1904.

TABLE CCXXXII.—One hundred and sixty-two principal cities—per cent of totals for the United States: 1890 to 1905.

	CENSUS.		
	1905	1900	1890 <sup>1</sup>
Number of establishments.....	42.2	41.6	52.3
Capital.....	57.1	60.3	61.1
Wage-earners, average number.....	53.9	54.7	61.3
Total wages.....	56.9	58.7	67.7
Cost of materials used.....	59.5	61.2	65.1
Value of products.....	59.9	61.4	66.9
Population <sup>2</sup> .....	26.1	25.2	23.8

<sup>1</sup> Includes neighborhood industries and mechanical trades.

<sup>2</sup> For 1905 the population is estimated as of June 1, 1904.

The percentages for 1880 and 1890 in these tables are based on totals which include the neighborhood industries and mechanical trades, and the comparison is therefore not exact. As explained on page xxxv, however, the inclusion of these industries has but slight effect on the statistics other than to increase the number of establishments. This conclusion is confirmed by a comparison of Table CCXXXI with a similar table in the Report for the Twelfth Census, in which the percentages for 1900 were based on totals which included the neighborhood industries and mechanical trades. From this comparison it appears that the exclusion of the neighborhood and mechanical industries has re-

sulted in crediting a slightly larger proportion of manufactures to the cities. For example, according to the table in the report for 1900, the establishments in the 100 cities reported 52.6 per cent of the value of products, while Table CCXXXI shows that exclusive of the neighborhood and mechanical industries they reported at that census 56.4 per cent. Similarly, the percentages contained in the report for 1900 corresponding with those in Table CCXXXII, show that the value of products of the establishments in the 162 principal cities formed 60 per cent of the total, as compared with the 61.4 per cent for the 100 cities. Therefore this change in Census methods does not destroy the force of the comparisons made in these tables, from which it appears that since 1890 manufactures located within the corporate limits of these cities have not increased as rapidly as those outside, and that the proportion of the total represented by the cities has decreased gradually.

These conditions were reversed apparently during the decade ending with 1890, as for all the items the proportion given in Table CCXXXI for that census are in excess of those for 1880, indicating a relative increase in the proportions of the manufactures in the 100 cities considered. In several of the items the percentages for 1900 compare more or less closely with those for 1880, while the proportions for 1905 are somewhat smaller. The totals for the manufactures of the 100 principal cities now form a smaller proportion of the total for the United States than they did twenty-five years ago.

The preceding tables show that in general since 1890 there has been a tendency to a wider distribution of manufactures and a more rapid increase for the districts outside the corporate limits of cities. Notwithstanding this wider distribution of manufactures, however, Tables CCXXXI and CCXXXII show that there has been an increasing concentration of population in the cities, the proportion of the total population in the 100 principal cities increasing from 18.2 per cent at the census of 1880 to 23.5 per cent as estimated at the census of 1905.

It is probable that a considerable number of the wage-earners employed in factories located just outside the corporate limits of cities reside in the cities. Such a location enables the rural manufacturers to draw on the urban population for labor, and in return this demand for labor naturally conduces to an increase of the urban population. It is possible, however, that the urban population thus employed does not equal the number of wage-earners residing outside the limits of cities and yet working within them. While the location of factories in or immediately adjoining cities is an important factor in the increase of the urban population, it is not the only factor, and the use of the corporate limits to mark the separation between the urban and rural districts makes it impossible to establish any definite relationship between urban population and the

# URBAN MANUFACTURES.

cclxxi

number of wage-earners who are residents of cities and reported as employed there, or to ascertain the proportion of the urban population that finds employment outside the corporate limits of the cities. Another reason why this comparison should not be made is that the number of wage-earners reported in the census of manufactures is the average number employed during the entire year, and does not bear a definite or fixed relation to the actual population.

*Selected industries.*—The statistics for the different industries in the 209 cities with a population of 20,000 and over at the census of 1900 are shown separately in the reports for each state, contained in Part II of this report. A presentation of urban manufactures by industries would require a summarization of the totals for each industry in these cities and in the remaining

335 cities and towns with a population of 8,000 or over. While such a summary would have some statistical value, it was not considered of sufficient importance to justify the work and expense attending its preparation. The statistics derive their principal value from comparisons with prior censuses, as it is only by such comparisons that the tendency of some industries toward concentration in cities and of others to a wider distribution in the rural districts can be determined. The comparison can be extended to 1890 if the statistics are confined to the 162 cities for which the industries were shown separately at that census.

As the entire field can not be covered, 20 industries have been selected, the statistics for which, as reported at the census of 1905 for the 162 cities, are summarized in Table CCXXXIII.

TABLE CCXXXIII.—SUMMARY—SELECTED INDUSTRIES IN ONE HUNDRED AND SIXTY-TWO PRINCIPAL CITIES: 1905.

INDUSTRY.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	Cost of materials used.	Value of products.
			Average number.	Wages.			
Total.....	30,195	\$2,427,932,400	1,177,026	\$560,253,901	\$378,368,473	\$1,274,980,165	\$2,658,104,260
Agricultural implements.....	157	95,660,623	24,638	13,034,997	6,234,746	24,063,310	54,922,889
Boots and shoes.....	800	74,600,738	90,360	43,107,417	12,710,200	112,486,087	190,680,363
Chemicals.....	184	51,780,853	8,588	4,707,567	3,900,418	27,016,510	43,973,664
Clothing, men's.....	4,113	140,135,161	121,964	53,084,767	55,871,185	178,004,935	333,089,500
Clothing, women's.....	3,155	68,029,245	106,770	48,050,369	23,409,202	124,632,115	235,041,202
Cotton goods.....	305	230,240,672	119,275	43,093,301	13,648,450	112,506,195	182,802,895
Dyeing and finishing textiles.....	243	38,079,983	17,161	7,734,721	3,045,665	10,404,620	26,800,797
Foundry and machine shop products <sup>2</sup> .....	5,097	578,738,943	243,115	142,138,570	51,089,404	196,053,645	493,445,446
Furniture.....	1,442	83,197,002	59,375	30,511,325	10,554,258	42,067,415	101,317,156
Hardware.....	298	25,653,333	17,687	8,063,579	2,777,687	9,380,349	25,374,499
Hosiery and knit goods.....	495	49,140,612	48,722	15,447,597	5,313,724	34,831,245	64,167,678
Jewelry.....	882	31,355,341	16,882	9,914,625	3,416,316	20,635,440	43,601,356
Leather, tanned, curried, and finished.....	367	96,349,622	29,042	14,261,085	5,835,869	86,019,201	118,065,446
Liquors, malt.....	728	433,169,887	38,494	27,820,706	102,135,544	60,901,002	246,065,306
Lumber, planing mill products, including sash, doors, and blinds.....	1,628	91,534,606	51,426	28,739,873	8,484,463	75,317,338	134,103,416
Shirts.....	418	17,942,698	24,211	8,176,391	5,721,245	20,714,880	40,291,455
Silk and silk goods.....	384	52,800,623	40,102	14,434,137	8,066,370	38,237,957	68,931,709
Tobacco, chewing and smoking, and snuff.....	246	119,365,739	14,033	4,552,875	24,904,228	30,826,140	77,009,042
Tobacco, cigars and cigarettes.....	9,102	105,763,709	87,121	35,888,134	29,184,181	53,003,384	141,707,307
Woolen goods.....	151	35,312,210	18,120	6,882,775	2,065,168	21,798,397	34,473,135

<sup>1</sup> Includes 14 establishments reported under "sulphuric, nitric, and mixed acids" and 5 as "wood distillation."

<sup>2</sup> Includes 12 establishments reported under "locomotives" and 223 as "stoves and furnaces, not including gas and oil stoves."

In every industry the degree of concentration in any locality is dependent largely upon how extensively conditions are present which are favorable to its development. Some industries develop more rapidly in the rural districts, because of the character of their raw material and because of conditions affecting the cost of transportation. In the majority of cases, however, manufactures tend to concentrate in the cities, because there they can enjoy the advantages of ready access to markets and to central distributing points, and command a large and readily attainable supply of capital, labor, and power.

The statistics given in Table CCXXXIII show the mag-

nitude of the 20 industries that are selected to indicate the degree of this concentration. From these totals it is evident that the industries are important factors in the industrial development of the United States, but their relation to the totals for the industries for the country as a whole is not indicated directly. From Table CCXXXIV, however, it appears that in the majority of cases the industry is more or less concentrated in the larger cities. This table shows the proportions which the totals for each of the 20 industries in the 162 cities formed of the totals for the same industries in the entire country at the censuses of 1890, 1900, and 1905.

TABLE CCXXXIV.—Selected industries in one hundred and sixty-two principal cities—per cent of totals for the industry: 1890 to 1905.

INDUSTRY.	Cen- sus.	Num- ber of estab- lish- ments.	Cap- tal.	WAGE-EARN- ERS AND WAGES.		Mis- celle- neous ex- penses.	Cost of mate- rials used.	Value of prod- ucts.
				Aver- age num- ber.	Wages.			
Agricultural imple- ments.	1905	24.2	48.6	52.0	52.1	41.1	49.8	49.0
	1900	22.7	56.7	50.0	57.7	04.1	58.1	57.7
	1890	21.4	57.7	51.3	51.0	55.9	55.1	54.5
Boots and shoes.....	1905	60.8	61.0	60.3	62.4	65.9	57.0	50.6
	1900	63.3	53.0	56.2	57.0	60.3	52.6	54.8
	1890	61.0	55.5	56.7	57.9	63.5	55.0	57.3
Chemicals.....	1905	41.1	43.2	35.0	35.2	43.6	53.8	47.8
	1900	42.9	45.6	35.8	38.5	44.1	57.5	52.5
	1890	63.2	70.5	70.8	70.4	80.7	81.4	79.3
Clothing, men's.....	1905	91.3	91.5	88.0	92.8	90.8	93.2	93.8
	1900	93.0	94.0	90.0	93.5	98.4	94.7	73.3
	1890	95.1	96.8	92.4	96.3	97.3	96.6	96.7
Clothing, women's.....	1905	94.2	92.0	92.3	95.1	96.1	95.3	95.3
	1900	94.4	94.6	91.7	94.7	97.8	95.0	95.3
	1890	98.0	98.6	97.3	98.0	98.7	98.3	98.4
Cotton goods.....	1905	28.3	39.5	38.4	45.7	45.0	39.9	41.3
	1900	34.6	45.9	43.8	51.0	53.7	45.8	47.6
	1890	41.4	52.5	51.4	54.8	55.6	53.1	54.0
Dyeing and finishing textiles.	1905	67.5	42.9	48.3	50.0	50.0	53.0	51.9
	1900	69.8	44.5	47.6	48.2	45.7	51.4	49.8
	1890	77.0	51.6	54.4	55.7	48.1	55.1	55.9
Foundry and machine shop products.	1905	54.1	61.8	60.3	61.8	64.3	60.5	61.7
	1900	54.4	66.1	66.0	67.0	73.2	66.8	66.9
	1890	59.4	73.9	73.6	75.3	77.1	75.9	76.1
Furniture.....	1905	58.1	54.5	53.9	61.2	63.1	57.1	59.4
	1900	58.8	58.9	51.8	64.5	68.8	63.0	63.8
	1890	62.4	69.5	68.9	74.7	68.7	75.6	74.6
Hardware.....	1905	67.0	48.5	55.8	55.3	55.1	56.4	55.4
	1900	64.6	53.7	57.1	56.2	58.2	56.8	56.9
	1890	67.4	50.9	58.3	57.9	73.0	57.9	61.0
Hosiery and knit goods.	1905	45.9	46.1	47.0	49.0	51.5	45.5	47.0
	1900	47.7	46.7	50.0	49.9	54.0	47.4	49.1
	1890	59.3	44.1	52.6	52.1	48.7	52.4	52.8
Jewelry.....	1905	86.2	79.0	76.5	78.7	82.1	85.4	81.9
	1900	84.0	83.8	74.5	75.6	88.2	81.5	79.2
	1890	85.1	81.5	76.2	78.7	72.9	89.7	85.1
Leather, tanned, cur- ried, and finished.	1905	35.0	39.7	50.7	52.7	46.7	45.0	47.0
	1900	29.3	41.6	51.4	53.9	44.4	45.7	46.9
	1890	24.2	42.1	39.6	43.6	38.0	43.1	42.1
Liquors, malt.....	1905	47.6	84.0	79.8	80.5	85.5	81.3	82.7
	1900	49.4	85.7	80.8	82.7	87.0	82.4	84.7
	1890	58.3	88.2	84.9	86.9	88.2	88.2	88.1
Lumber, planing mill products, including sash, doors, and blinds.	1905	32.5	51.7	52.7	56.7	62.1	52.6	54.2
	1900	30.5	53.2	53.1	57.5	63.1	51.2	52.7
	1890	39.1	61.2	64.8	70.2	68.0	63.8	65.7
Shirts.....	1905	65.2	76.7	66.3	72.8	88.7	80.8	79.0
	1900	75.3	78.3	67.1	74.6	89.1	80.5	79.6
	1890	90.1	85.6	81.2	84.0	90.6	81.7	84.5
Silk and silk goods....	1905	61.5	48.2	50.4	53.9	57.4	50.4	51.7
	1900	60.7	50.3	55.2	60.0	59.2	54.1	55.7
	1890	70.7	61.2	60.2	70.1	66.6	61.1	65.1
Tobacco, chewing and smoking, and snuff.	1905	56.8	66.7	58.5	67.2	64.6	68.6	66.0
	1900	49.2	69.2	62.2	74.0	76.4	76.8	75.8
	1890	44.3	66.5	55.6	68.0	71.9	73.7	72.6
Tobacco, cigars and cigarettes.	1905	55.5	72.9	64.3	64.2	70.2	65.3	66.1
	1900	56.0	66.8	67.1	68.4	70.5	68.0	69.0
	1890	63.1	76.8	71.8	73.7	74.6	76.3	75.1
Woolen goods.....	1905	19.1	25.2	24.9	23.9	25.1	24.8	24.2
	1900	17.7	29.2	32.2	32.2	33.2	35.0	34.1
	1890	16.8	29.4	32.3	32.2	29.1	32.3	32.6

<sup>1</sup> Lincoln town, R. I., included in 1890, is omitted in 1900 and 1905.

<sup>2</sup> Includes 14 establishments reported under "sulphuric, nitric, and mixed acids" and 5 under "wood distillation."

<sup>3</sup> Includes 12 establishments reported under "locomotives" and 223 under "stoves and furnaces, not including gas and oil stoves."

The percentages for 1890 are based on totals which include the town of Lincoln, R. I. The omission of this town from the totals for 1900 and 1905 may have had a slight effect on the totals for some of the indus-

tries. The inclusion in 1900 and 1905 of "leather, morocco," and "leather, patent and enameled," under the head of "leather, tanned, curried, and finished," should also be taken into account. The percentages in this table are as a rule in harmony with those given in Tables CCXXXI and CCXXXII, which indicate a decrease in the proportion of all manufactures in the principal cities since 1890. But the principal object of the table is to illustrate the fact that the decrease is not general; that it has not occurred in all industries, and also that in some industries it is more pronounced than in others. For example, the boot and shoe factories in the 162 principal cities represented a larger proportion of the total for the industry in the United States at the census of 1905 than they did in 1900, and the same is true of the establishments engaged in tanning, currying, and finishing leather, though it is probable that the finishing and not the tanning branch of the industry has increased in the cities. On the other hand, the percentages for the value of products for the remaining industries indicate a more rapid decrease in the proportion in cities than is shown by Table CCXXXII for all industries.

The decrease in the proportion of manufactures in the 162 principal cities is, of course, an indication of the more rapid development in the smaller cities, many of which have a population of over 8,000, and in the rural districts. It does not follow that the same rate of decrease would be observed in any of the industries if a larger number of cities were considered. It is evident, therefore, that the necessity of limiting the presentation to 162 cities detracts greatly from the value of the statistics.

*Groups according to population.*—Table CCXXXIX shows that more than two-thirds of the value of products of the manufactures of the country as reported at the census of 1905 were contained in 544 municipalities, but the manufactures in many of these places are comparatively unimportant and could be omitted without seriously reducing the proportion. It is instructive to trace the concentration further, using certain limitations of population. This is done in Table CCXXXV, which shows the totals for 1900 and 1905 for five groups of cities, arranged according to their estimated population in 1905, and gives the percentages the totals of each group formed of the corresponding totals for the United States.

While a grouping of the cities according to population is of assistance in localizing the concentration of manufactures, it is not a perfect method of ascertaining what cities, if grouped together, would show the highest concentration relative to their population. Some places with a large population are primarily residential in character, while the larger proportion of the population of others is engaged in commercial pursuits. In such places the manufactures would not be as extensive as in cities with a smaller population, but

devoted chiefly to manufacturing industries. To show the extent which a city is devoted to manufactures, it would be necessary to arrange the cities in groups according to a certain basis of industrial importance

such as per capita production. This arrangement, however, would not show the volume of output, and population seems to be the only unit of measurement that can be easily and uniformly applied.

TABLE CXXXV.—COMPARATIVE SUMMARY—MANUFACTURES AND POPULATION IN GROUPS OF CITIES ARRANGED ACCORDING TO POPULATION, WITH PER CENT DISTRIBUTION: 1905 AND 1900.

GROUP.	Cen- sus.	Number of estab- lish- ments.	Capital.	WAGE-EARNERS AND WAGES.		Cost of mate- rials used.	Value of products.	Popula- tion. <sup>1</sup>
				Average number.	Wages.			
United States.....	1905	216,262	\$12,686,265,673	5,470,321	\$2,611,540,532	\$8,503,940,756	\$14,802,147,087	82,653,557
	1900	207,562	8,978,825,200	4,715,023	2,009,735,799	6,577,614,074	11,411,121,122	76,058,167
457 cities of 8,000 to 50,000 population.....	1905	30,356	2,504,640,804	1,140,054	530,122,919	2,636,044,241	2,820,176,788	8,045,403
	1900	28,127	1,746,833,244	963,426	410,443,032	2,278,245,644	2,164,079,314	7,073,998
Per cent of total.....	1905	14.0	19.7	20.8	20.6	31.0	19.1	10.5
	1900	13.6	19.5	20.4	20.4	34.6	19.0	10.1
47 cities of 50,000 to 100,000 population.....	1905	11,316	1,072,646,938	492,894	238,375,808	733,576,693	1,295,019,974	3,337,015
	1900	10,475	764,931,621	428,392	188,332,303	547,855,628	980,361,081	2,937,515
Per cent of total.....	1905	5.2	8.5	9.0	9.1	8.0	8.7	4.0
	1900	5.0	8.5	9.1	9.4	8.3	8.7	3.9
34 cities of 100,000 to 500,000 population.....	1905	27,952	2,241,802,031	849,200	426,456,530	425,532,257	2,509,936,159	7,085,094
	1900	25,069	1,672,569,332	754,285	337,380,030	139,394,828	2,004,587,509	6,314,084
Per cent of total.....	1905	12.9	17.7	15.5	16.3	5.0	17.0	8.6
	1900	12.4	18.0	16.0	16.8	2.1	17.6	8.3
3 cities of 500,000 to 1,000,000 population.....	1905	7,392	546,262,895	207,082	100,149,093	313,356,869	603,204,781	1,778,570
	1900	7,798	387,885,322	184,256	80,847,480	250,356,269	491,604,937	1,645,087
Per cent of total.....	1905	3.4	4.3	3.8	3.8	3.7	4.1	2.2
	1900	3.8	4.3	3.9	4.0	3.0	4.3	2.2
3 cities of over 1,000,000 population.....	1905	36,085	2,200,868,615	935,599	492,173,202	1,741,295,472	3,072,947,361	7,408,215
	1900	34,414	1,810,212,956	824,552	400,120,435	1,431,607,415	2,490,731,214	6,420,474
Per cent of total.....	1905	16.7	17.3	17.1	18.8	20.5	20.8	9.0
	1900	16.0	20.2	17.5	19.0	21.8	21.8	8.5

<sup>1</sup> For 1905 the population is estimated.

Difference in the character of industries also has its effect upon the totals for value of products. In slaughtering and meat packing and in smelting and refining, for instance, there is a greater cost of materials relative to value of products than in most other industries. The value of products of a city in which such kinds of manufacture figure largely will be out of proportion to the city's real industrial importance.

At the census of 1905 the three cities having a population of over 1,000,000 each contain a comparatively small proportion—8.9 per cent—of the estimated population, but represent the greatest concentration of industry shown in Table CXXXV; they have the largest proportion, 16.7 per cent, of the establishments, and also the largest proportion, 20.8 per cent, of the value of products. The 6 cities having a population of 500,000 and over contained only about 11 per cent of the population of the United States, yet for them was reported nearly one-fourth of the total value of products.

The group of 457 cities with a population of from 8,000 to 50,000 represents a larger proportion of the capital, wage-earners, wages, and cost of materials in 1905 than did any other one group, but this large number of places covers a much greater area and therefore does not represent such a pronounced concentration of manufactures as the 3 largest cities.

*Detailed summary.*—Table CXXXVI presents certain details for urban and rural manufactures as reported at the census of 1905, which were not included in

Table CXXXIX because comparative data were not available for the census of 1900.

The details contained in the table assist in determining more definitely the elements in which there is the greatest concentration in the cities. For example, "land" and "cash and sundries" are the two items of capital which show such concentration to the greatest extent. Land is more valuable in the cities, and therefore represents a larger proportion of the capital of the urban manufactures. The large proportion, 71.3 per cent, shown for cash and sundries, should not, however, be accepted as an indication that it is the general practice of establishments in cities to carry a larger amount of live capital than do the factories in the rural districts, but merely that at the census of 1905 there was a larger proportion of such capital in the urban districts. The amount paid for "rent of works" is related to capital, because it represents an expenditure for the use of the plant, and the amount reported for rent of works at the census of 1905, 89.6 per cent was returned by the establishments in the 544 cities and towns, the largest proportion appearing for any of the items in this table. Next to rent, the largest proportions shown for urban manufactures are those for women wage-earners. The factories in the 544 cities and towns covered by these statistics gave employment to 78.5 per cent of the 1,065,884 women wage-earners and 81 per cent of the total wages paid to women reported by all establishments in 1905, indicating the importance of this class of wage-earners in the manufacturing industries of the urban districts.



TABLE CCXXXVI.—DETAILED SUMMARY—THE UNITED STATES AND URBAN AND RURAL MANUFACTURES: 1905.

	United States.	URBAN.		RURAL.	
		Total.	Per cent of United States.	Total.	Per cent of United States.
Number of establishments.....	216,262	113,101	52.3	103,161	47.7
Capital:					
Total.....	\$12,686,265,673	\$8,566,221,283	67.5	\$4,120,044,390	32.5
Land.....	\$980,560,625	\$684,505,448	69.8	\$296,055,177	30.2
Buildings.....	\$1,996,125,808	\$1,254,842,407	62.9	\$741,283,401	37.1
Machinery, tools, and implements.....	\$3,489,759,836	\$2,193,018,884	62.0	\$1,296,840,952	37.1
Cash and sundries.....	\$6,210,820,404	\$4,432,864,544	71.3	\$1,780,964,860	28.7
Proprietors and firm members.....	225,704	113,740	50.4	111,964	49.6
Salaried officials, clerks, etc.:					
Total number.....	619,751	300,713	75.2	129,038	24.8
Total salaries.....	\$574,761,231	\$438,686,154	76.3	\$136,075,077	23.7
Wage-earners, average number and total wages:					
Total average number.....	5,470,321	3,624,829	66.3	1,845,492	33.7
Total wages.....	\$2,611,540,532	\$1,796,277,612	68.8	\$815,262,920	31.2
Men 16 years and over—					
Average number.....	4,244,538	2,689,883	63.4	1,554,655	36.6
Wages.....	\$2,266,273,317	\$1,521,142,009	67.1	\$745,131,308	32.9
Women 16 years and over—					
Average number.....	1,065,884	836,836	78.5	229,048	21.5
Wages.....	\$317,270,008	\$256,032,716	81.0	\$60,340,292	19.0
Children under 16 years—					
Average number.....	159,899	98,110	61.4	61,789	38.6
Wages.....	\$27,988,207	\$18,202,887	65.0	\$9,785,320	35.0
Miscellaneous expenses:					
Total.....	\$1,455,019,473	\$1,110,261,278	76.3	\$344,758,195	23.7
Rent of works.....	\$73,267,209	\$65,670,821	89.6	\$7,596,388	10.4
Taxes, not including internal revenue.....	\$58,697,616	\$40,180,713	68.5	\$18,507,003	31.5
Rent of offices, interest, etc.....	\$1,177,732,132	\$898,524,694	76.3	\$279,207,438	23.7
Contract work.....	\$145,322,516	\$105,870,050	72.9	\$39,446,466	27.1
Cost of materials used:					
Total.....	\$8,503,040,756	\$5,840,805,532	68.8	\$2,654,144,224	31.2
Principal materials, including mill supplies and freight.....	\$8,178,912,347	\$5,664,921,190	69.3	\$2,513,991,157	30.7
Fuel, and rent of power and heat.....	\$325,037,409	\$184,884,342	56.9	\$140,153,067	43.1
Value of products, including custom work and repairing.....	\$14,802,147,087	\$10,310,285,063	69.7	\$4,491,862,024	30.3

*States by geographic divisions.*—The percentages of increase in the urban and rural manufactures of the states and territories are shown in the reports for the different states and territories contained in Part II. To enable a comparison of the rate of increase in different states, the percentages for number of establishments, capital, average number of wage-earners, wages, and value of products are reproduced in Table CCXXXVII, the states and territories being arranged in geographic divisions.

Except in number of establishments the percentages of increase are greater for rural than for urban manufactures in the United States as a whole. They are also greater in the North Atlantic, South Atlantic, South Central, and Western divisions. Urban districts show the largest percentages of increase in number of wage-earners and in value of products in the Basin and Plateau division, with 36.3 per cent and 90.9 per cent, respectively. The Rocky Mountain division made the smallest relative increases, with six-tenths of 1 per cent in number of wage-earners and 14.6 per cent in value of products. The rural districts show the largest proportional increase for these two items in the Basin and Plateau division, with 57.6 per cent in number of wage-earners and 74.4 per cent in value of products; and the smallest in the New England division, with 8.6

per cent and 21.1 per cent, respectively. Indian Territory, Oklahoma, and Idaho show the largest percentages of increase in value of products and number of wage-earners because of the rapid industrial development of new territory. The actual increase, however, was insignificant when compared with that for most of the older states, where this development has already reached a high stage, and which consequently show a much smaller relative increase.

In the District of Columbia all the manufactures were urban; in the states of Idaho and Nevada, and in Indian Territory and the territories of Alaska, Arizona, and New Mexico all were rural. In 19 states and territories a percentage of increase is shown in the number both of urban and rural establishments and in 11 of these the percentage for rural establishments is the greater. In 5 states there is a percentage of decrease for both urban and rural establishments and in 3 of these the percentage for the rural is the greater. In 5 states a decrease is shown for urban establishments accompanied by an increase for rural, while in 15 states a decrease appears for rural establishments accompanied by an increase for the urban. In only 4 states are the percentages of increase for each of the four remaining items greater for urban districts; in 18 states they are greater for the rural districts.



# URBAN MANUFACTURES.

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TABLE CCXXXVII.—PERCENTAGES OF INCREASE FOR URBAN AND RURAL MANUFACTURES, BY GEOGRAPHIC DIVISIONS, STATES, AND TERRITORIES: 1905.

GEOGRAPHIC DIVISION AND STATE OR TERRITORY.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Value of products.	GEOGRAPHIC DIVISION AND STATE OR TERRITORY.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Value of products.
			Average number.	Wages.					Average number.	Wages.	
United States.....	4.2	41.3	16.0	20.9	29.7	Southern South Atlantic—Con.					
Urban.....	6.2	34.2	14.9	26.8	26.6	South Carolina.....	2.2	80.8	26.4	51.9	48.8
Rural.....	2.1	58.7	18.3	37.6	37.4	Urban.....	12.8	22.0	17.4	32.6	27.0
Continental United States.....	4.2	41.2	16.0	30.0	29.7	Rural.....	0.4	95.7	28.1	56.8	54.7
Urban.....	6.2	34.2	14.9	26.8	26.6	Georgia.....	6.8	70.5	11.3	37.2	59.8
Rural.....	2.1	58.5	18.3	37.7	37.3	Urban.....	21.7	43.3	21.0	38.6	49.4
North Atlantic division.....	1.8	33.4	15.1	24.4	26.3	Rural.....	3.5	93.1	7.4	36.5	66.7
Urban.....	3.3	28.3	14.1	22.3	24.3	Florida.....	10.8	28.4	18.7	44.4	47.1
Rural.....	1.1	48.2	17.9	31.0	33.0	Urban.....	65.1	69.2	61.1	73.5	75.0
New England.....	1.3	24.1	10.4	19.4	22.0	Rural.....	11.1	7.9	7.2	29.4	30.0
Urban.....	1.0	23.2	11.2	19.0	22.4	North Central division.....	2.8	42.5	14.7	31.0	27.8
Rural.....	1.7	26.5	8.6	20.5	21.1	Urban.....	6.8	40.0	15.4	31.7	27.1
Maine.....	9.3	26.1	7.2	27.1	27.5	Rural.....	10.8	50.3	13.0	29.4	20.8
Urban.....	11.0	6.2	1.4	9.2	15.9	Eastern North Central.....	2.4	40.8	14.1	30.1	26.4
Rural.....	12.8	36.3	10.6	38.5	34.0	Urban.....	7.3	37.3	14.9	31.1	26.3
New Hampshire.....	18.6	18.8	13.4	7.1	14.9	Rural.....	12.6	51.9	11.9	27.5	20.7
Urban.....	15.1	17.6	11.1	8.4	17.7	Ohio.....	10.6	50.1	18.2	33.7	28.3
Rural.....	10.3	20.9	6.3	5.4	11.0	Urban.....	5.4	47.5	17.2	34.0	30.1
Vermont.....	12.3	44.0	17.5	33.2	22.5	Rural.....	17.4	59.0	21.2	33.0	23.0
Urban.....	21.8	17.2	12.5	23.5	13.6	Indiana.....	11.2	42.3	10.9	21.6	16.9
Rural.....	10.7	49.8	18.7	36.1	24.8	Urban.....	11.8	39.0	15.3	27.2	13.2
Massachusetts.....	11.9	23.5	11.4	19.0	23.8	Rural.....	18.2	47.5	4.3	12.8	23.4
Urban.....	11.9	23.7	11.9	19.5	25.0	Illinois.....	3.8	33.2	14.0	31.0	25.8
Rural.....	11.7	22.7	9.5	16.8	18.7	Urban.....	6.4	27.7	11.8	28.3	23.4
Rhode Island.....	13.6	22.0	10.3	19.8	22.1	Rural.....	11.9	73.3	27.5	40.3	44.0
Urban.....	12.5	21.8	9.6	19.0	20.0	Michigan.....	1.9	36.8	12.5	30.0	34.2
Rural.....	18.9	23.0	13.6	20.3	29.1	Urban.....	8.9	35.1	24.1	42.4	43.2
Connecticut.....	2.8	24.8	13.7	19.8	17.1	Rural.....	13.4	39.5	13.4	12.7	21.7
Urban.....	8.9	27.9	17.1	22.0	17.4	Wisconsin.....	9.1	44.3	10.1	28.3	25.8
Rural.....	14.4	19.5	8.1	15.7	10.6	Urban.....	9.9	47.0	9.2	25.7	27.8
Southern North Atlantic.....	2.8	37.4	17.6	27.0	28.1	Rural.....	8.7	38.3	11.5	32.0	22.6
Urban.....	4.7	30.5	15.5	23.9	25.0	Western North Central.....	3.7	48.6	17.4	34.7	32.0
Rural.....	10.8	59.1	24.1	37.6	39.1	Urban.....	5.0	49.8	17.6	34.0	29.7
New York.....	3.4	33.3	17.9	27.5	32.9	Rural.....	2.8	45.0	16.9	36.3	37.7
Urban.....	5.7	29.2	17.7	26.7	32.1	Minnesota.....	16.1	38.9	7.9	23.5	37.6
Rural.....	13.2	55.1	18.9	32.3	38.6	Urban.....	14.5	37.2	10.7	26.2	29.7
New Jersey.....	9.3	49.8	24.5	34.7	40.0	Rural.....	17.2	42.8	3.3	18.9	51.9
Urban.....	8.8	38.1	23.1	31.6	35.3	Iowa.....	10.9	30.1	11.4	27.6	20.8
Rural.....	10.3	97.4	28.8	45.8	55.6	Urban.....	9.1	29.2	14.3	32.0	25.7
Pennsylvania.....	0.1	37.7	15.0	23.9	18.5	Rural.....	15.5	32.5	4.4	16.8	9.9
Urban.....	1.0	29.0	9.7	17.0	10.6	Missouri.....	15.7	69.5	23.6	42.7	39.0
Rural.....	10.9	53.9	25.7	38.4	35.3	Urban.....	12.5	70.4	23.8	41.7	37.8
South Atlantic division.....	2.2	59.5	14.0	34.1	36.8	Rural.....	19.6	64.6	22.9	47.1	43.0
Urban.....	4.7	42.5	10.3	24.2	25.9	North Dakota.....	50.4	62.4	29.2	53.6	63.2
Rural.....	1.2	76.9	16.5	43.8	47.2	Urban.....	30.6	4.6	25.7	34.0	15.7
Northern South Atlantic.....	2.4	46.2	10.4	26.4	23.9	Rural.....	52.8	80.8	30.3	59.9	80.1
Urban.....	12.2	41.4	4.7	17.2	18.1	South Dakota.....	9.0	25.3	12.1	25.8	37.3
Rural.....	5.9	54.9	19.2	43.3	32.6	Urban.....	27.1	88.5	49.5	63.7	114.8
Delaware.....	10.3	31.3	110.1	13.5	10.4	Rural.....	8.5	13.9	6.0	20.0	29.4
Urban.....	15.7	25.4	16.5	12.5	10.6	Nebraska.....	7.3	21.7	8.5	24.7	18.9
Rural.....	3.5	43.9	118.8	17.5	10.3	Urban.....	13.5	15.4	3.1	17.2	14.8
Maryland.....	10.9	35.3	(2)	11.5	15.3	Rural.....	5.2	44.5	20.1	42.0	41.7
Urban.....	14.0	40.1	0.2	11.0	14.1	Kansas.....	7.7	49.1	31.2	47.5	28.7
Rural.....	4.7	21.0	10.5	10.1	17.8	Urban.....	6.7	60.3	18.9	30.5	30.2
District of Columbia.....	11.8	12.5	2.3	21.0	11.8	Rural.....	8.1	37.6	53.4	78.6	25.7
Urban.....	11.8	12.5	2.3	21.0	11.8	South Central division.....	7.9	71.6	25.5	53.0	52.3
Rural.....						Urban.....	11.3	56.1	21.3	36.3	42.5
Virginia.....	(2)	60.3	21.2	37.8	37.0	Rural.....	6.6	84.4	27.9	65.5	60.9
Urban.....	10.9	59.8	14.3	29.8	28.1	Eastern South Central.....	2.5	73.2	24.8	40.9	42.8
Rural.....	0.3	61.0	28.3	47.6	46.2	Urban.....	8.5	63.7	22.0	37.4	35.5
West Virginia.....	15.6	76.8	32.3	67.4	47.8	Rural.....	0.3	81.7	26.7	60.3	49.8
Urban.....	11.0	50.9	23.3	43.3	48.2	Kentucky.....	2.4	67.4	15.6	32.4	26.3
Rural.....	16.6	91.7	36.1	79.6	47.6	Urban.....	11.5	75.1	12.8	29.1	20.0
Southern South Atlantic.....	2.0	79.1	17.4	45.0	58.3	Rural.....	5.1	51.9	20.5	39.1	20.8
Urban.....	28.3	45.9	25.4	47.3	52.3	Tennessee.....	1.9	62.2	31.8	54.9	48.7
Rural.....	12.2	93.2	15.3	44.2	60.8	Urban.....	22.5	52.6	36.0	54.2	54.8
North Carolina.....	15.6	106.5	18.0	52.1	67.1	Rural.....	15.1	75.2	27.2	55.7	41.9
Urban.....	21.7	60.7	15.2	43.7	58.5	Alabama.....	15.9	75.2	18.0	46.7	51.4
Rural.....	18.0	117.4	18.5	53.8	69.1	Urban.....	14.0	56.2	21.9	26.4	14.9
						Rural.....	10.3	79.8	17.0	53.3	64.4
						Mississippi.....	17.5	121.3	44.4	87.4	70.4
						Urban.....	32.9	16.2	9.1	35.1	35.6
						Rural.....	16.4	142.3	48.0	94.3	75.6

<sup>1</sup> Decrease.

<sup>2</sup> Less than one-tenth of 1 per cent.

## MANUFACTURES.

TABLE CCXXXVII.—PERCENTAGES OF INCREASE FOR URBAN AND RURAL MANUFACTURES, BY GEOGRAPHIC DIVISIONS, STATES, AND TERRITORIES: 1905—Continued.

GEOGRAPHIC DIVISION AND STATE OR TERRITORY.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Value of products.	GEOGRAPHIC DIVISION AND STATE OR TERRITORY.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Value of products.
			Average number.	Wages.					Average number.	Wages.	
South Central division—Con.						Western division—Continued.					
Western South Central.....	15.4	69.6	26.5	57.2	64.6	Rocky Mountain—Continued.					
Urban.....	15.1	46.0	20.2	34.6	52.5	Colorado.....	21.4	85.1	11.9	29.0	12.4
Rural.....	15.5	87.4	20.7	71.5	73.9	Urban.....	21.3	15.9	7.6	24.2	11.9
Louisiana.....	14.5	49.5	36.6	71.9	67.3	Rural.....	21.5	246.5	17.5	35.5	28.1
Urban.....	6.2	39.5	12.9	27.8	48.9	New Mexico.....	14.4	114.7	39.7	79.5	40.5
Rural.....	20.3	57.5	64.0	107.8	88.0	Urban.....	14.4	114.7	39.7	79.5	40.5
Arkansas.....	0.2	82.4	5.0	42.8	35.0	Rural.....	7.5	80.5	50.9	81.8	76.7
Urban.....	20.4	70.9	67.7	88.5	62.9	Basin and Plateau.....	24.9	82.8	36.3	60.6	90.9
Rural.....	7.9	85.7	12.0	36.3	29.6	Urban.....	1.8	80.0	57.6	90.1	74.4
Indian Territory.....	160.3	215.1	107.6	201.7	200.8	Rural.....	9.7	51.3	53.3	73.5	37.4
Urban.....	160.3	215.1	107.6	201.7	200.8	Arizona.....	9.7	51.3	53.3	73.5	37.4
Rural.....	107.9	351.1	147.2	221.5	200.6	Urban.....	9.7	51.3	53.3	73.5	37.4
Oklahoma.....	78.3	459.1	128.4	203.4	226.1	Rural.....	5.4	96.7	48.8	86.7	116.5
Urban.....	116.2	294.8	157.6	233.0	191.2	Urban.....	24.9	82.8	36.3	60.6	90.9
Rural.....	1.6	81.7	27.1	44.7	62.0	Rural.....	15.4	103.2	62.5	119.2	127.8
Texas.....	16.5	40.0	15.9	27.8	49.8	Nevada.....	16.2	131.1	59.1	96.7	145.5
Urban.....	15.5	124.6	36.0	61.9	72.2	Urban.....	16.2	131.1	59.1	96.7	145.5
Rural.....	20.0	73.1	29.3	58.7	44.8	Rural.....	34.4	72.6	33.2	66.5	51.2
Western division.....	30.5	51.7	27.0	54.3	44.2	Pacific.....	33.6	69.7	34.4	65.1	54.7
Urban.....	27.7	98.7	30.8	63.5	45.5	Urban.....	35.1	76.3	31.8	68.2	46.8
Rural.....	17.3	72.6	10.4	31.0	21.3	Rural.....	42.8	133.2	43.4	76.3	81.9
Rocky Mountain.....	17.9	9.4	0.6	20.1	14.6	Washington.....	44.4	135.8	41.8	72.5	87.5
Urban.....	17.0	166.7	19.0	41.9	28.9	Urban.....	41.9	131.0	44.2	78.3	77.0
Rural.....	13.3	37.6	10.1	17.3	25.0	Rural.....	13.9	55.2	28.1	67.7	51.7
Montana.....	0.7	33.4	14.7	15.6	38.0	Oregon.....	9.1	51.2	48.8	94.4	66.3
Urban.....	15.4	44.2	14.0	19.1	4.9	Urban.....	16.1	59.5	13.2	46.7	35.8
Rural.....	26.8	354.9	97.2	151.7	192.2	Rural.....	36.9	61.1	30.0	62.1	42.7
Idaho.....	26.8	354.9	97.2	151.7	192.2	California.....	34.7	60.1	31.0	59.9	46.0
Urban.....	21.6	31.6	11.0	4.3	7.8	Urban.....	40.1	62.5	28.2	66.0	37.8
Urban.....	10.3	13.4	15.9	1.6	16.6	Alaska.....	70.8	199.4	114.2	120.3	96.6
Rural.....	24.5	45.1	14.2	6.5	17.7	Urban.....	70.8	199.4	114.2	120.3	96.6
Wyoming.....						Rural.....					

1 Decrease.

*Leading industries in principal cities.*—Table CCXXXVIII shows, for the censuses of 1905 and 1900, the 6 leading industries in each of 25 cities selected as the leaders in industrial production. Table CCXXXIX shows the rank of cities in each of 15 selected industries. The industries appear in the order of their rank by value of products in the United States, and for each industry the 6 cities are given which reported the largest value of products for the industry.

Where one branch of an industry is of sufficient importance it is the custom of the Census Bureau to give that branch a distinct classification and present it separately in the various tables. In compiling Tables CCXXXVIII and CCXXXIX, however, it seemed desirable that some of the industries should be presented in their entirety; therefore the classifications covering the different branches were combined. The industry of slaugh-

tering and meat packing, for example, as given in the tables includes the two classes "slaughtering and meat packing, wholesale," and "slaughtering, wholesale, not including meat packing."

While the same industries appear as leading industries in a number of the selected cities in 1905, only 6 ranked first in more than one city. Not only is there this variety, but since 1900 the relative importance of one or more of the industries has changed in every city but one. According to Table CCXXXVIII the only city for which no change in rank of industries is shown is Providence, R. I., each of the leading industries occupying the same relative position at the census of 1905 as it did in 1900, although all reported gains. In Milwaukee and San Francisco the same industries appear in 1905 as in 1900, although there were numerous changes in their ranking.

Radical changes have occurred in the city of Allegheny, Pa., where, although there was a decrease in total value of products, certain industries made substantial increases. In 1900 "cars, steam railroad, not including the operations of railroad companies," held first place, although represented by but 1 establishment; in 1905 the industry had disappeared. In the latter year slaughtering and meat packing attained first place, advancing from fifth. A decrease in value of products for iron and steel caused that industry to fall from second place in 1900 to fourth in 1905, exchanging places with "pickles, preserves, and sauces," which showed a corresponding increase in value of products. "Foundry and machine shop products" remained third in rank, and "structural ironwork" went from sixth to fifth place. Sixth place in 1905 was occupied by "cars and general shop construction and repairs by steam railroad companies." Such changes, however, are constantly taking place in the relative position of manufacturing industries, and the illustrations here given are largely characteristic of the whole.

The wide distribution of certain industries and the concentration of certain others are indicated by Table CCXXXIX. The clothing industry has the greatest concentration, more than 50 per cent of the value being produced in New York city in 1905, notwithstanding which fact it appears as the leading industry in 4 of the 25 cities. An example of wide distribution is found in "foundry and machine shop products," which in 1905 appears as one of the 6 principal industries in 20 of the selected cities, holding first place in 2, second in 6, third in 7, fourth in 2, fifth in 1, and sixth in 2.

Changes were most frequent among the industries holding sixth place, numbering 18 in the 25 cities. For fifth place there were 15 changes. This disturbance in rank decreases gradually as the higher ranks are reached. For the industries ranking fourth changes occurred in 14 cities; for those ranking third, in 15 cities; for those ranking second, in 12 cities; and for those ranking first, in only 3 cities.

In Table CCXXXIX New York city ranks first in 5 of the industries and Chicago in 3, while no other city ranks first in more than 1 industry. Comparatively little change in ranking has occurred among the cities producing the 6 largest values of product in any of the 15 industries represented in the table. In 1905 the same city as in 1900 held first place in each of the industries, with the exception of furniture and of electrical machinery, apparatus, and supplies, while the city holding second place had changed in 7 industries, and the cities holding third, fourth, fifth, and sixth places in 8 industries each.

A comparison of Tables CCXXXVIII and CCXXXIX develops some facts of interest. For Chicago there was reported a larger value of products for "slaughtering and meat packing" than for any other city, and from Table CCXXXVIII it appears that this industry was also the leading one for the city. On the other hand, the largest value of products in "leather, tanned, curried, and finished" was reported for Philadelphia, although the industry was not among the 6 leading manufactures of the city. For "foundry and machine shop products," however, which appears as the principal industry in Philadelphia, the largest value of products in the industry was reported for Chicago.

TABLE CCXXXVIII.—RANK OF SIX PRINCIPAL INDUSTRIES II

	CITY.	Census.	First.	Second.
1	New York, N. Y.....	{ 1905 1900	Clothing..... Clothing.....	Printing and publishing..... Sugar and molasses, refining.....
2	Chicago, Ill.....	{ 1905 1900	Slaughtering and meat packing..... Slaughtering and meat packing.....	Clothing..... Clothing.....
3	Philadelphia, Pa.....	{ 1905 1900	Foundry and machine shop products..... Foundry and machine shop products.....	Sugar and molasses, refining..... Sugar and molasses, refining.....
4	St. Louis, Mo.....	{ 1905 1900	Tobacco manufacture..... Tobacco manufacture.....	Liquors, malt..... Slaughtering and meat packing.....
5	Boston, Mass.....	{ 1905 1900	Printing and publishing..... Printing and publishing.....	Clothing..... Sugar and molasses, refining.....
6	Cleveland, Ohio.....	{ 1905 1900	Iron and steel..... Iron and steel.....	Foundry and machine shop products..... Foundry and machine shop products.....
7	Cincinnati, Ohio.....	{ 1905 1900	Clothing..... Clothing.....	Slaughtering and meat packing..... Foundry and machine shop products.....
8	Pittsburg, Pa.....	{ 1905 1900	Iron and steel..... Iron and steel.....	Foundry and machine shop products..... Foundry and machine shop products.....
9	Baltimore, Md.....	{ 1905 1900	Clothing..... Clothing.....	Tobacco manufacture..... Canning and preserving.....
10	Newark, N. J.....	{ 1905 1900	Smelting and refining..... Smelting and refining.....	Leather, tanned, curried, and finished..... Leather, tanned, curried, and finished.....
11	Buffalo, N. Y.....	{ 1905 1900	Slaughtering and meat packing..... Slaughtering and meat packing.....	Foundry and machine shop products..... Smelting and refining.....
12	Milwaukee, Wis.....	{ 1905 1900	Liquors, malt..... Foundry and machine shop products.....	Leather, tanned, curried, and finished..... Liquors, malt.....
13	San Francisco, Cal.....	{ 1905 1900	Sugar and molasses, refining..... Sugar and molasses, refining.....	Printing and publishing..... Foundry and machine shop products.....
14	Detroit, Mich.....	{ 1905 1900	Foundry and machine shop products..... Cars, not including operations of railroad companies.....	Cars, not including operations of railroad companies..... Foundry and machine shop products.....
15	Minneapolis, Minn.....	{ 1905 1900	Flour and grist mill products..... Flour and grist mill products.....	Lumber and timber products..... Lumber and timber products.....
16	Providence, R. I.....	{ 1905 1900	Worsted goods..... Worsted goods.....	Jewelry..... Jewelry.....
17	New Orleans, La.....	{ 1905 1900	Sugar and molasses, refining..... Sugar and molasses, refining.....	Rice, cleaning and polishing..... Bags, other than paper.....
18	Louisville, Ky.....	{ 1905 1900	Tobacco manufacture..... Tobacco manufacture.....	Oil, cottonseed and cake..... Oil, cottonseed and cake.....
19	Rochester, N. Y.....	{ 1905 1900	Clothing..... Clothing.....	Boots and shoes..... Boots and shoes.....
20	Indianapolis, Ind.....	{ 1905 1900	Slaughtering and meat packing..... Slaughtering and meat packing.....	Foundry and machine shop products..... Foundry and machine shop products.....
21	Jersey City, N. J.....	{ 1905 1900	Sugar and molasses, refining..... Sugar and molasses, refining.....	Slaughtering and meat packing..... Slaughtering and meat packing.....
22	Lynn, Mass.....	{ 1905 1900	Boots and shoes..... Boots and shoes.....	Electrical machinery, apparatus, and supplies..... Boot and shoe cut stock.....
23	Paterson, N. J.....	{ 1905 1900	Silk and silk goods..... Silk and silk goods.....	Foundry and machine shop products..... Foundry and machine shop products.....
24	Worcester, Mass.....	{ 1905 1900	Iron and steel..... Iron and steel.....	Foundry and machine shop products..... Foundry and machine shop products.....
25	Allegheny, Pa.....	{ 1905 1900	Slaughtering and meat packing..... Cars, not including operations of railroad companies.....	Pickles, preserves, and sauces..... Iron and steel.....

# URBAN MANUFACTURES.

ccclxxix

EACH OF TWENTY-FIVE SELECTED CITIES: 1905 AND 1900.

Third.	Fourth.	Fifth.	Sixth.	
Sugar and molasses, refining.....	Slaughtering and meat packing.....	Tobacco manufacture.....	Bread and other bakery products.....	1
Printing and publishing.....	Slaughtering and meat packing.....	Tobacco manufacture.....	Foundry and machine shop products.....	
Foundry and machine shop products.....	Printing and publishing.....	Iron and steel.....	Cars, not including operations of rail- road companies.....	2
Foundry and machine shop products.....	Printing and publishing.....	Iron and steel.....	Agricultural implements.....	
Clothing.....	Printing and publishing.....	Worsted goods.....	Petroleum, refining.....	3
Clothing.....	Printing and publishing.....	Carpets and rugs, other than rag.....	Petroleum, refining.....	
Boots and shoes.....	Slaughtering and meat packing.....	Printing and publishing.....	Foundry and machine shop products.....	4
Liquors, malt.....	Foundry and machine shop products.....	Printing and publishing.....	Clothing.....	
Sugar and molasses, refining.....	Foundry and machine shop products.....	Liquors, malt.....	Confectionery.....	5
Clothing.....	Foundry and machine shop products.....	Liquors, malt.....	Chocolate and cocoa products.....	
Clothing.....	Slaughtering and meat packing.....	Printing and publishing.....	Petroleum, refining.....	6
Clothing.....	Slaughtering and meat packing.....	Liquors, malt.....	Printing and publishing.....	
Foundry and machine shop products.....	Boots and shoes.....	Liquors, distilled.....	Printing and publishing.....	7
Slaughtering and meat packing.....	Liquors, distilled.....	Boots and shoes.....	Tobacco manufacture.....	
Printing and publishing.....	Bread and other bakery products.....	Cars and general shop construction and repairs by railroad companies.....	Slaughtering and meat packing.....	8
Structural ironwork.....	Iron and steel pipe, wrought.....	Printing and publishing.....	Liquors, malt.....	
Foundry and machine shop products.....	Tinsmithing, coppersmithing, and sheet iron working.....	Canning and preserving.....	Shirts.....	9
Tobacco manufacture.....	Foundry and machine shop products.....	Slaughtering and meat packing.....	Tinsmithing, coppersmithing, and sheet iron working.....	
Liquors, malt.....	Jewelry.....	Foundry and machine shop products.....	Hats, felt.....	10
Liquors, malt.....	Jewelry.....	Foundry and machine shop products.....	Slaughtering and meat packing.....	
Flour and grist mill products.....	Oil, linseed.....	Smelting and refining.....	Liquors, malt.....	11
Foundry and machine shop products.....	Oil, linseed.....	Cars and general shop construction and repairs by railroad companies.....	Liquors, malt.....	
Foundry and machine shop products.....	Iron and steel.....	Flour and grist mill products.....	Slaughtering and meat packing.....	12
Leather, tanned, curried, and finished.....	Iron and steel.....	Flour and grist mill products.....	Slaughtering and meat packing.....	
Foundry and machine shop products.....	Slaughtering and meat packing.....	Shipbuilding.....	Clothing.....	13
Slaughtering and meat packing.....	Shipbuilding.....	Printing and publishing.....	Clothing.....	
Druggists' preparations.....	Tobacco manufacture.....	Automobiles.....	Slaughtering and meat packing.....	14
Tobacco manufacture.....	Druggists' preparations.....	Slaughtering and meat packing.....	Iron and steel.....	
Oil, linseed.....	Bags, other than paper.....	Printing and publishing.....	Lumber, planing mill products, in- cluding sash, doors, and blinds.....	15
Bags, other than paper.....	Printing and publishing.....	Foundry and machine shop products.....	Lumber, planing mill products, in- cluding sash, doors, and blinds.....	
Foundry and machine shop products.....	Silversmithing and silverware.....	Gold and silver, reducing and refining, not from the ore.....	Cotton goods.....	16
Foundry and machine shop products.....	Silversmithing and silverware.....	Gold and silver, reducing and refining, not from the ore.....	Cotton goods.....	
Bags, other than paper.....	Oil, cottonseed and cake.....	Tobacco manufacture.....	Printing and publishing.....	17
Rice, cleaning and polishing.....	Clothing.....	Tobacco manufacture.....	Foundry and machine shop products.....	
Slaughtering and meat packing.....	Clothing.....	Flour and grist mill products.....	Liquors, distilled.....	18
Slaughtering and meat packing.....	Foundry and machine shop products.....	Leather, tanned, curried, and finished.....	Liquors, distilled.....	
Petroleum, refining.....	Photographic materials.....	Foundry and machine shop products.....	Flour and grist mill products.....	19
Foundry and machine shop products.....	Tobacco manufacture.....	Flour and grist mill products.....	Liquors, malt.....	
Flour and grist mill products.....	Printing and publishing.....	Furniture.....	Cars and general shop construction and repairs by railroad companies.....	20
Flour and grist mill products.....	Printing and publishing.....	Carriages and wagons.....	Liquors, malt.....	
Soap and candles.....	Foundry and machine shop products.....	Cars and general shop construction and repairs by railroad companies.....	Tobacco manufacture.....	21
Tobacco manufacture.....	Cars and general shop construction and repairs by railroad companies.....	Chemicals.....	Soap and candles.....	
Boot and shoe cut stock.....	Leather, tanned, curried, and finished.....	Patent medicines and compounds.....	Boot and shoe findings.....	22
Electrical machinery, apparatus, and supplies.....	Leather, tanned, curried, and finished.....	Patent medicines and compounds.....	Foundry and machine shop products.....	
Dyeing and finishing textiles.....	Slaughtering and meat packing.....	Iron and steel.....	Shirts.....	23
Dyeing and finishing textiles.....	Iron and steel.....	Liquors, malt.....	Slaughtering and meat packing.....	
Slaughtering and meat packing.....	Clothing.....	Leather, tanned, curried, and finished.....	Woolen goods.....	24
Slaughtering and meat packing.....	Boots and shoes.....	Woolen goods.....	Wirework, including wire rope and cable.....	
Foundry and machine shop products.....	Iron and steel.....	Structural ironwork.....	Cars and general shop construction and repairs by railroad companies.....	25
Foundry and machine shop products.....	Pickles, preserves, and sauces.....	Slaughtering and meat packing.....	Structural ironwork.....	

## MANUFACTURES.

TABLE CCXXXIX.—RANK OF SIX PRINCIPAL CITIES IN EACH

INDUSTRY.		Census.	First.	Second.
1	Slaughtering and meat packing.....	{ 1905 1900	Chicago, Ill..... Chicago, Ill.....	Kansas City, Kans..... Kansas City, Kans.....
2	Iron and steel.....	{ 1905 1900	Pittsburg, Pa..... Pittsburg, Pa.....	Chicago, Ill..... McKeesport, Pa.....
3	Foundry and machine shop products <sup>1</sup> .....	{ 1905 1900	Chicago, Ill..... Chicago, Ill.....	Philadelphia, Pa..... New York, N. Y.....
4	Flour and grist mill products.....	{ 1905 1900	Minneapolis, Minn..... Minneapolis, Minn.....	New York, N. Y..... New York, N. Y.....
5	Clothing.....	{ 1905 1900	New York, N. Y..... New York, N. Y.....	Chicago, Ill..... Chicago, Ill.....
6	Printing and publishing.....	{ 1905 1900	New York, N. Y..... New York, N. Y.....	Chicago, Ill..... Chicago, Ill.....
7	Cotton goods.....	{ 1905 1900	Fall River, Mass..... Fall River, Mass.....	New Bedford, Mass..... Philadelphia, Pa.....
8	Tobacco manufacture.....	{ 1905 1900	New York, N. Y..... New York, N. Y.....	St. Louis, Mo..... St. Louis, Mo.....
9	Boots and shoes.....	{ 1905 1900	Brookton, Mass..... Brookton, Mass.....	Lynn, Mass..... Lynn, Mass.....
10	Liquors, malt.....	{ 1905 1900	New York, N. Y..... New York, N. Y.....	Milwaukee, Wis..... Chicago, Ill.....
11	Leather, tanned, curried, and finished.....	{ 1905 1900	Philadelphia, Pa..... Philadelphia, Pa.....	Milwaukee, Wis..... Newark, N. J.....
12	Lumber, planing mill products, including sash, doors, and blinds.....	{ 1905 1900	New York, N. Y..... New York, N. Y.....	Chicago, Ill..... Chicago, Ill.....
13	Furniture.....	{ 1905 1900	Chicago, Ill..... New York, N. Y.....	New York, N. Y..... Chicago, Ill.....
14	Electrical machinery, apparatus, and supplies.....	{ 1905 1900	Schenectady, N. Y..... Chicago, Ill.....	Chicago, Ill..... New York, N. Y.....
15	Silk and silk goods.....	{ 1905 1900	Paterson, N. J..... Paterson, N. J.....	New York, N. Y..... New York, N. Y.....

<sup>1</sup>Includes "locomotives" and "stoves and furnaces."

# URBAN MANUFACTURES.

ccclxxxi

OF FIFTEEN SELECTED INDUSTRIES: 1905 AND 1900.

Third.	Fourth.	Fifth.	Sixth.	
South Omaha, Nebr.....	New York, N. Y.....	East St. Louis, Ill.....	Indianapolis, Ind.....	} 1
South Omaha, Nebr.....	New York, N. Y.....	East St. Louis, Ill.....	Indianapolis, Ind.....	
Youngstown, Ohio.....	Cleveland, Ohio.....	Duquesne, Pa.....	Johnstown, Pa.....	} 2
Chicago, Ill.....	Youngstown, Ohio.....	Cleveland, Ohio.....	Duquesne, Pa.....	
New York, N. Y.....	Cleveland, Ohio.....	Detroit, Mich.....	Cincinnati, Ohio.....	} 3
Philadelphia, Pa.....	Cleveland, Ohio.....	Pittsburg, Pa.....	Milwaukee, Wis.....	
Buffalo, N. Y.....	Milwaukee, Wis.....	Kansas City, Mo.....	Seattle, Wash.....	} 4
Milwaukee, Wis.....	Chicago, Ill.....	Toledo, Ohio.....	Indianapolis, Ind.....	
Philadelphia, Pa.....	Baltimore, Md.....	Cincinnati, Ohio.....	Boston, Mass.....	} 5
Philadelphia, Pa.....	Baltimore, Md.....	Cincinnati, Ohio.....	Rochester, N. Y.....	
Philadelphia, Pa.....	Boston, Mass.....	St. Louis, Mo.....	San Francisco, Cal.....	} 6
Philadelphia, Pa.....	Boston, Mass.....	St. Louis, Mo.....	Cincinnati, Ohio.....	
Lowell, Mass.....	Philadelphia, Pa.....	Manchester, N. H.....	Pawtucket, R. I.....	} 7
Lowell, Mass.....	New Bedford, Mass.....	Manchester, N. H.....	Lawrence, Mass.....	
Louisville, Ky.....	Chicago, Ill.....	Baltimore, Md.....	Winston, N. C.....	} 8
Louisville, Ky.....	Richmond, Va.....	Baltimore, Md.....	Philadelphia, Pa.....	
St. Louis, Mo.....	Haverhill, Mass.....	New York, N. Y.....	Cincinnati, Ohio.....	} 9
Haverhill, Mass.....	New York, N. Y.....	Cincinnati, Ohio.....	St. Louis, Mo.....	
St. Louis, Mo.....	Chicago, Ill.....	Philadelphia, Pa.....	Newark, N. J.....	} 10
Milwaukee, Wis.....	Philadelphia, Pa.....	St. Louis, Mo.....	Newark, N. J.....	
Newark, N. J.....	Wilmington, Del.....	Chicago, Ill.....	Peabody, Mass.....	} 11
Milwaukee, Wis.....	Wilmington, Del.....	Chicago, Ill.....	Peabody, Mass.....	
Buffalo, N. Y.....	Minneapolis, Minn.....	Philadelphia, Pa.....	Milwaukee, Wis.....	} 12
Philadelphia, Pa.....	Buffalo, N. Y.....	St. Louis, Mo.....	Minneapolis, Minn.....	
Grand Rapids, Mich.....	Philadelphia, Pa.....	Cincinnati, Ohio.....	St. Louis, Mo.....	} 13
Grand Rapids, Mich.....	Philadelphia, Pa.....	Cincinnati, Ohio.....	St. Louis, Mo.....	
New York, N. Y.....	Lynn, Mass.....	Philadelphia, Pa.....	East Providence, R. I.....	} 14
Schenectady, N. Y.....	Lynn, Mass.....	Philadelphia, Pa.....	East Providence, R. I.....	
Philadelphia, Pa.....	Seranton, Pa.....	West Hoboken, N. J.....	Allentown, Pa.....	} 15
Philadelphia, Pa.....	West Hoboken, N. J.....	Seranton, Pa.....	Allentown, Pa.....	

*Cities and states compared.*—The importance of manufactures in the large cities is more fully evident when the totals for the separate cities are compared with the totals for the larger political units, such as states, which contain a greater area, more abundant natural resources, and in most instances a larger population. A comparison of this character is made in Table CCXL, which gives the population and the value of products of manufactures in 30 of the prin-

icipal cities, and shows for each city the number of states and territories exceeded by it in the value of products reported. The cities are ranked according to value of products in 1905. In 1900 the first 30 cities were not the same in all cases as those shown in the table, and the ranking for that year, therefore, indicates solely the relative importance, according to the figures for 1900, of the cities which comprised the group in 1905.

TABLE CCXL.—PRINCIPAL CITIES IN MANUFACTURES, AND NUMBER OF STATES AND TERRITORIES OUTRANKED BY EACH IN VALUE OF PRODUCTS: 1905 AND 1900.

CITY.	VALUE OF PRODUCTS.				NUMBER OF STATES AND TERRITORIES OUTRANKED IN VALUE OF PROD- UCTS.		POPULATION.	
	Total.		Rank.					
	1905	1900	1905	1900	1905	1900	1904 <sup>1</sup>	1900
New York, N. Y.	\$1,520,523,006	\$1,172,870,261	1	1			3,887,762	3,437,202
Chicago, Ill.	955,036,277	797,879,141	2	2	46	47	1,932,315	1,698,575
Philadelphia, Pa.	591,388,078	519,981,812	3	3	45	45	1,392,389	1,293,997
St. Louis, Mo.	267,307,038	193,732,788	4	4	38	37	624,626	575,238
Boston, Mass.	184,351,163	162,764,523	5	6	34	36	588,482	560,392
Cleveland, Ohio.	172,115,101	126,156,839	6	9	34	32	425,632	381,768
Cincinnati, Ohio.	166,059,050	141,677,997	7	7	34	35	341,444	325,902
Pittsburg, Pa.	165,428,881	165,002,687	8	5	34	36	352,852	321,610
Baltimore, Md.	151,546,580	135,107,626	9	8	31	35	538,765	508,957
Newark, N. J.	150,055,227	112,728,045	10	10	29	31	272,950	246,070
Buffalo, N. Y.	147,377,873	105,627,182	11	13	28	28	372,008	352,387
Milwaukee, Wis.	138,881,545	110,854,102	12	11	26	30	308,343	285,315
San Francisco, Cal.	137,788,233	107,023,567	13	12	25	28	360,298	342,782
Detroit, Mich.	128,761,658	88,365,924	14	15	24	24	317,501	285,704
Minneapolis, Minn.	121,593,120	94,407,774	15	14	23	27	250,122	202,718
Kansas City, Kans.	96,473,050	80,023,107	16	16	20	23	57,710	51,418
Providence, R. I.	91,980,903	78,657,103	17	17	20	23	194,027	175,597
New Orleans, La.	84,604,006	57,446,116	18	23	20	20	305,132	287,104
Louisville, Ky.	83,204,125	60,110,474	19	20	20	20	219,191	204,731
Rochester, N. Y.	82,747,370	59,668,950	20	21	20	20	177,223	162,908
Indianapolis, Ind.	82,227,950	59,322,234	21	22	20	20	204,772	169,164
Jersey City, N. J.	75,740,934	72,920,000	22	18	19	23	227,445	206,433
South Omaha, Nebr.	67,415,177	69,508,899	23	19	19	21	33,177	26,901
Peoria, Ill.	60,020,411	44,569,371	24	26	17	17	63,687	56,100
Bayonne, N. J.	60,633,761	38,001,420	25	28	17	15	40,354	32,722
Lynn, Mass.	55,003,023	39,347,493	26	27	15	15	75,336	68,513
Paterson, N. J.	54,673,083	48,502,044	27	24	15	17	110,257	105,171
Omaha, Nebr.	54,003,704	38,074,244	28	29	15	15	116,963	102,555
Worcester, Mass.	52,144,965	46,793,372	29	25	14	17	126,192	118,421
Youngstown, Ohio.	48,126,885	33,908,450	30	30	13	13	50,081	44,885

<sup>1</sup> Estimated as of June 1.

<sup>2</sup> State census.

The value of products, \$1,526,523,006, reported for the city of New York at the census of 1905 exceeded that reported for each of 49 states and territories, including Alaska. Chicago, with products valued at \$955,036,277, outranked 46 states and territories. The value of products for Philadelphia amounted to \$591,388,078, and exceeded the amount reported for each of 45 states and territories.

One of the striking features of the table is the comparatively small population of some of the cities for which are shown products of value much greater than those for a number of states. For example, South Omaha, Nebr., at the census of 1905, reported products valued at \$67,415,177, which exceeded the value reported for each of 19 states and territories at that

census. The population of South Omaha, estimated at 33,177 in 1904, was the smallest for any city represented in this table, although 7 had a lower ranking in value of products, and it did not approach in population that of any of the 19 states and territories it outranked in manufactures. The total for the city is increased out of proportion to the size of the city by the inclusion of slaughtering and meat packing, wholesale, in which the cost of materials constitutes a very large percentage of the value of products.

Youngstown, Ohio, had an estimated population of only 50,081, but its products of manufactures were valued at \$48,126,885 in 1905, an amount in excess of that reported for each of 13 states. The prominence of this city is due to the iron and steel industry, for



which, owing to the high proportion which the cost of materials forms of the value of the products, a larger relative value of products was reported than for most industries, although a comparatively small number of wage-earners were employed.

In 1905 Newark, N. J., retained the same position relative to the other cities shown in the table as in 1900; the increase in its value of products, however, was exceeded by the increase of 2 states, so that in

1905 its manufacturing preeminence extended over 2 less states than in 1900.

*Rank of cities.*—Table 17 presents comparative statistics for each of the 544 cities and towns included in the urban districts, as compiled for the censuses of 1905 and 1900. In Table CCXLI are presented, for 1900 and 1905, the 100 principal manufacturing cities arranged in the order of the value of products at the census of 1905.

## MANUFACTURES.

TABLE CCXLI.—COMPARATIVE SUMMARY FOR ONE HUNDRED PRINCIPAL

CITY.	Census.	ESTABLISH- MENTS.		CAPITAL.		SALARIED OFFICIALS, CLERKS, ETC.			
		Number.	Rank.	Amount.	Rank.	Number.	Rank.	Salaries.	Rank.
1 New York, N. Y.....	1905	20,839	1	\$1,042,946,487	1	63,586	1	\$73,027,655	1
2	1900	19,243	1	853,238,133	1	43,783	1	51,656,094	1
3 Chicago, Ill.....	1905	8,150	2	637,743,474	2	40,270	2	45,601,201	2
4	1900	7,068	2	511,249,431	2	32,406	2	32,067,676	2
5 Philadelphia, Pa.....	1905	7,087	3	520,178,654	3	22,839	3	25,396,245	3
6	1900	7,503	3	445,725,392	3	17,408	3	18,931,020	3
7 St. Louis, Mo.....	1905	2,482	5	265,036,570	4	11,381	4	13,474,841	4
8	1900	2,040	5	150,525,899	5	8,807	4	10,078,516	4
9 Boston, Mass.....	1905	2,747	4	131,562,822	10	9,428	5	10,404,168	5
10	1900	2,878	4	130,142,653	6	7,691	5	8,179,522	5
11 Cleveland, Ohio.....	1905	1,617	9	156,509,252	7	6,883	7	8,308,099	7
12	1900	1,349	12	93,021,316	12	5,006	8	5,381,525	8
13 Cincinnati, Ohio.....	1905	2,171	7	130,271,811	11	8,190	6	9,077,414	6
14	1900	2,464	6	103,463,842	9	6,164	6	6,437,089	6
15 Pittsburg, Pa.....	1905	1,177	14	202,424,240	5	5,976	9	7,140,220	8
16	1900	928	16	160,570,413	4	3,929	12	4,291,899	12
17 Baltimore, Md.....	1905	2,163	8	148,763,503	8	6,806	8	7,086,614	9
18	1900	2,274	7	107,216,770	7	5,501	7	5,871,110	7
19 Newark, N. J.....	1905	1,600	10	119,026,172	12	5,135	13	6,685,231	10
20	1900	1,573	9	97,182,390	10	4,146	10	5,255,512	9
21 Buffalo, N. Y.....	1905	1,538	11	137,023,114	9	5,204	11	5,542,132	14
22	1900	1,478	10	95,739,035	11	3,707	13	3,429,473	14
23 Milwaukee, Wis.....	1905	1,532	12	162,120,641	6	5,106	14	5,809,500	13
24	1900	1,419	11	105,503,870	8	4,077	11	4,304,009	11
25 San Francisco, Cal.....	1905	2,251	6	102,362,378	13	5,190	12	6,629,948	11
26	1900	1,748	8	69,643,100	15	3,413	14	3,929,372	13
27 Detroit, Mich.....	1905	1,363	13	91,228,214	15	5,940	10	6,143,535	12
28	1900	1,259	13	67,223,682	16	4,947	9	4,726,201	10
29 Minneapolis, Minn.....	1905	877	17	66,699,604	20	3,542	17	3,560,129	18
30	1900	789	18	50,176,730	19	2,158	19	2,112,851	19
31 Kansas City, Kans.....	1905	100	85	27,773,422	54	1,150	47	1,216,068	50
32	1900	114	80	18,236,338	57	2,063	21	1,910,765	22
33 Providence, R. I.....	1905	881	16	95,666,407	14	3,051	19	3,818,597	17
34	1900	929	15	79,686,394	13	2,493	16	3,053,324	16
35 New Orleans, La.....	1905	691	22	58,547,304	23	2,345	22	2,400,858	24
36	1900	688	20	42,868,215	25	1,570	24	1,607,472	25
37 Louisville, Ky.....	1905	842	18	79,908,733	17	3,126	18	3,366,967	19
38	1900	860	17	44,015,944	24	2,401	17	2,594,662	17
39 Rochester, N. Y.....	1905	1,119	15	71,529,724	18	4,205	15	4,592,130	15
40	1900	1,221	14	45,210,445	23	3,061	15	3,130,623	15
41 Indianapolis, Ind.....	1905	810	20	53,419,820	27	4,115	16	4,096,269	16
42	1900	697	19	34,736,371	27	2,325	18	2,248,407	18
43 Jersey City, N. J.....	1905	628	24	82,394,841	16	2,379	21	2,989,880	20
44	1900	536	25	78,612,223	14	1,614	23	2,038,967	21
45 South Omaha, Nebr.....	1905	41	96	20,564,155	72	875	59	949,594	65
46	1900	41	96	16,382,386	64	769	50	735,731	63
47 Peoria, Ill.....	1905	265	55	22,243,821	67	782	65	875,060	71
48	1900	291	47	26,638,370	35	686	55	708,970	63
49 Bayonne, N. J.....	1905	58	93	50,206,704	28	746	69	1,036,787	62
50	1900	63	92	26,251,109	38	248	92	412,799	80
51 Lynn, Mass.....	1905	431	36	23,139,185	65	1,700	34	1,530,374	39
52	1900	423	34	16,036,623	68	1,175	32	953,647	44
53 Paterson, N. J.....	1905	513	28	53,605,585	26	1,859	31	2,163,909	29
54	1900	487	29	46,893,628	21	1,199	30	1,688,313	26
55 Omaha, Nebr.....	1905	318	44	34,557,961	38	966	55	1,079,795	58
56	1900	307	46	32,956,435	28	791	48	765,724	56
57 Worcester, Mass.....	1905	470	32	48,771,852	30	2,043	27	2,376,913	26
58	1900	465	30	41,384,128	26	1,826	28	1,706,189	24
59 Youngstown, Ohio.....	1905	119	80	42,370,660	31	791	63	936,284	66
60	1900	103	83	22,063,859	50	414	75	478,369	75
61 Lawrence, Mass.....	1905	187	63	60,063,193	21	633	79	971,244	64
62	1900	167	71	48,827,445	20	648	59	906,945	41
63 Lowell, Mass.....	1905	256	60	54,809,038	25	964	56	1,345,120	45
64	1900	286	48	45,509,908	22	684	56	929,302	45
65 Allegheny, Pa.....	1905	385	40	58,341,154	24	2,297	24	2,606,773	22
66	1900	373	40	51,203,845	18	1,921	22	2,059,341	20
67 Toledo, Ohio.....	1905	599	27	38,643,390	35	2,203	25	2,291,688	27
68	1900	445	31	23,788,291	45	1,162	33	1,142,884	37

# URBAN MANUFACTURES.

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CITIES IN MANUFACTURES, WITH RANK FOR EACH ITEM: 1905 AND 1900.

WAGE-EARNERS AND WAGES.										MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS, INCLUDING CUSTOM WORK AND REPAIRING.	
Total.				Men 16 years and over.		Women 16 years and over.		Children under 16 years.		Amount.	Rank.	Amount.	Rank.	Amount.	Rank.
Average number.	Rank.	Wages.	Rank.	Average number.	Rank.	Average number.	Rank.	Average number.	Rank.						
404,716	1	\$248,128,250	1	314,066	1	147,454	1	3,196	4	\$206,825,065	1	\$818,029,207	1	\$1,526,523,006	1
388,586	1	100,655,802	1	263,214	1	120,002	1	5,280	3	131,828,922	1	634,210,045	1	1,172,870,201	1
241,984	2	136,404,096	2	191,844	2	46,987	2	3,153	5	96,208,031	2	580,913,093	2	955,036,277	2
221,101	2	108,727,154	2	177,388	2	37,186	3	6,617	2	70,445,692	2	502,222,401	2	797,870,141	2
228,899	3	107,040,307	3	153,081	3	61,830	2	13,388	1	55,449,026	3	333,352,212	3	591,388,078	3
214,775	3	94,737,380	3	144,293	3	58,037	2	12,445	1	30,854,009	3	205,174,960	3	519,081,812	3
82,608	4	42,642,358	4	62,026	4	16,772	6	3,300	3	37,183,066	5	137,739,927	4	267,307,038	4
64,832	5	20,145,127	4	48,870	4	13,570	4	2,392	6	27,404,021	4	101,838,142	4	193,732,788	4
50,160	7	31,873,185	6	40,124	9	18,169	5	867	22	25,006,898	7	94,602,913	7	184,351,103	5
52,853	8	28,208,920	5	37,515	9	14,744	6	594	20	18,645,743	7	82,295,297	6	162,764,523	6
64,095	6	33,471,513	5	53,358	5	9,374	15	1,363	13	15,062,862	13	97,701,529	6	172,116,101	6
64,832	7	28,091,891	7	44,213	6	8,216	17	433	36	9,001,737	13	66,084,498	11	193,732,788	9
58,584	8	27,387,569	8	43,387	7	14,213	7	984	20	27,069,745	6	83,255,402	11	166,059,050	7
64,042	6	23,103,724	9	40,118	8	13,865	7	959	17	21,162,064	6	71,390,944	8	141,677,907	7
50,220	9	31,540,678	7	40,288	6	5,407	25	1,534	9	14,521,511	14	97,945,328	5	165,428,881	8
52,540	9	28,018,045	6	40,358	5	4,553	27	1,629	8	9,001,989	12	97,925,551	5	165,002,687	5
65,224	5	25,633,550	9	41,571	8	19,767	4	3,886	2	18,224,852	9	81,014,029	12	151,546,580	9
66,571	4	23,493,427	8	41,016	7	21,677	4	3,878	4	12,112,419	10	75,222,830	7	135,107,626	8
50,697	10	25,021,026	10	36,165	12	13,093	8	1,430	12	17,735,013	10	80,689,255	13	150,055,227	10
42,878	10	20,364,784	10	31,193	11	10,434	12	1,251	12	9,001,230	15	60,771,784	15	112,728,046	10
43,567	12	*21,621,762	13	36,441	10	6,739	21	387	40	15,083,614	12	88,367,338	9	147,377,873	11
34,275	14	15,078,428	14	28,937	12	4,828	25	510	31	8,604,630	16	65,938,402	12	105,627,182	13
43,540	13	20,010,000	14	33,202	13	8,093	18	2,245	6	20,754,026	8	71,705,220	15	138,881,545	12
41,220	11	17,102,265	12	31,750	10	6,556	20	2,908	5	50,698,977	8	50,698,977	16	110,854,102	11
38,429	15	25,015,427	11	30,192	14	7,597	19	640	26	12,474,338	16	75,945,898	14	137,788,233	13
32,555	15	17,258,004	11	24,360	15	7,424	19	771	22	0,850,396	18	65,535,251	13	107,023,567	12
48,879	11	22,786,576	12	36,303	11	10,810	13	1,766	7	15,865,288	11	66,792,687	16	128,761,658	14
38,373	12	15,317,342	15	28,001	13	9,137	14	1,235	13	9,779,533	14	47,007,497	18	88,365,042	15
21,752	24	11,400,385	22	18,483	19	3,202	44	67	83	9,220,861	19	89,086,269	8	121,593,120	15
19,620	25	9,383,404	22	16,640	22	2,826	41	154	61	4,158,190	27	68,909,670	9	94,407,774	14
10,520	58	5,440,439	57	9,344	49	833	77	352	42	3,975,304	40	83,883,022	10	96,473,050	16
9,483	54	4,258,875	56	8,373	47	765	74	345	39	2,512,439	38	68,875,458	10	80,023,107	16
30,804	14	10,554,958	15	26,643	15	11,410	10	1,751	8	7,195,102	21	49,978,310	20	91,980,963	17
38,368	13	16,931,442	13	25,676	14	11,073	11	1,619	9	5,077,732	21	42,550,664	19	78,557,103	17
17,631	32	7,444,474	38	12,535	33	4,335	35	761	24	6,021,477	24	61,905,300	17	84,004,006	18
16,185	33	6,170,279	30	10,785	35	4,781	26	619	25	4,310,515	24	57,446,116	20	57,446,116	23
24,985	21	10,811,540	24	19,346	18	4,638	33	1,001	19	12,272,141	17	45,681,703	23	83,204,125	19
23,062	20	8,435,575	26	18,513	16	3,396	34	1,153	14	12,106,057	11	34,876,937	22	66,110,474	20
32,440	16	15,042,978	16	21,625	16	10,817	14	498	33	11,414,450	18	38,801,710	25	82,747,370	20
28,049	19	11,365,546	17	18,297	17	8,839	15	913	20	8,163,254	17	28,244,520	25	59,668,959	21
26,725	20	12,620,443	18	21,611	17	4,652	32	462	35	7,942,435	20	51,763,357	19	82,227,050	21
20,985	23	8,844,089	24	17,394	20	3,340	36	251	49	4,174,538	26	38,286,906	21	50,322,234	22
20,353	27	10,021,067	26	14,713	25	5,136	27	504	30	7,031,034	22	48,798,807	21	75,740,934	22
17,391	29	7,964,944	29	13,043	25	3,991	30	357	38	6,203,102	19	50,265,640	17	72,029,690	18
5,662	80	3,210,335	87	5,243	80	270	91	149	61	2,156,229	60	59,192,589	18	67,415,177	23
0,327	74	3,115,078	68	5,787	64	212	88	328	41	1,602,596	56	61,017,930	14	69,508,899	19
5,998	86	3,306,803	86	5,438	84	492	85	68	82	37,874,872	4	16,050,664	67	60,920,411	24
5,996	79	2,872,353	72	5,204	60	650	79	52	88	24,822,086	5	12,984,629	58	44,569,371	27
7,057	78	4,276,613	60	6,805	64	116	96	136	65	3,557,005	43	46,984,412	22	60,633,761	25
4,070	88	2,622,791	80	4,512	83	88	92	70	79	763,065	84	33,794,455	23	38,601,429	32
21,540	25	11,737,737	20	15,237	24	6,028	23	275	51	3,741,789	42	32,615,644	27	55,003,023	26
16,377	32	7,970,542	28	11,399	34	4,875	24	103	72	2,103,491	41	24,471,218	30	39,347,493	30
28,509	18	13,001,545	17	18,164	20	9,162	16	1,183	16	6,355,010	23	27,440,733	31	54,673,083	27
28,542	18	11,843,098	16	17,607	19	9,409	13	1,436	10	4,898,731	22	25,054,780	27	48,502,044	26
5,822	87	3,203,768	89	4,476	91	1,290	67	47	87	4,270,807	37	42,803,426	24	54,093,704	28
5,270	83	2,062,707	81	4,325	85	883	72	68	80	3,495,099	31	19,928,091	35	38,074,244	33
22,796	22	11,825,275	19	17,362	21	4,788	29	616	27	4,863,659	30	27,011,127	32	52,144,965	29
22,593	22	11,280,925	18	17,890	18	4,129	29	574	30	3,796,027	29	23,469,548	31	46,793,372	26
8,577	71	5,718,979	54	8,360	56	138	95	40	91	1,699,496	82	35,874,450	20	48,126,885	30
8,679	50	4,729,020	51	8,556	45	106	89	17	94	933,371	77	23,133,938	32	33,008,450	38
21,910	23	8,907,784	29	12,534	34	8,204	17	1,172	17	2,030,609	74	29,415,580	30	48,036,598	31
20,899	24	8,196,813	27	11,779	30	8,305	16	815	21	1,901,221	47	24,841,477	28	41,741,080	28
29,303	17	11,580,724	21	15,570	23	12,221	9	1,512	11	4,787,058	31	26,910,790	33	46,879,212	32
20,254	17	10,853,025	19	15,520	24	12,431	10	1,303	10	4,309,444	25	20,279,444	34	41,202,084	29
15,389	38	8,264,368	32	12,855	32	2,074	58	460	36	4,565,463	32	26,635,692	34	45,830,272	33
19,254	26	9,617,343	21	16,656	21	2,120	52	478	34	4,150,893	28	30,831,981	24	53,195,378	24
15,759	35	8,125,761	33	13,553	30	2,140	57	66	86	5,482,006	26	25,080,856	36	44,823,004	34
12,747	43	5,575,520	42	10,495	37	1,997	56	255	48	2,686,405	36	19,397,193	36	31,976,094	42

## MANUFACTURES.

TABLE CCXLI.—COMPARATIVE SUMMARY FOR ONE HUNDRED PRINCIPAL CITIES

CITY.	Census.	ESTABLISH- MENTS.		CAPITAL.		SALARIED OFFICIALS, CLERKS, ETC.			
		Number.	Rank.	Amount.	Rank.	Number.	Rank.	Salaries.	Rank.
69 Bridgeport, Conn.....	1905	306	47	\$49,381,348	20	1,955	30	\$2,510,932	23
70 .....	1900	286	48	31,024,974	20	1,057	37	1,434,352	30
71 Fall River, Mass.....	1905	234	04	69,375,125	19	607	78	1,141,642	54
72 .....	1900	240	58	57,414,879	17	512	68	861,431	50
73 Cambridge, Mass.....	1905	262	57	32,200,238	44	1,478	37	1,712,826	35
74 .....	1900	243	57	24,590,508	44	1,033	39	1,221,449	34
75 Columbus, Ohio.....	1905	400	34	30,308,424	40	2,397	20	2,385,821	25
76 .....	1900	408	35	23,402,351	47	1,573	25	1,514,008	27
77 New Haven, Conn.....	1905	490	29	31,412,715	48	1,819	32	2,026,335	31
78 .....	1900	437	32	27,902,490	34	1,396	26	1,442,704	29
79 Dayton, Ohio.....	1905	431	36	32,900,844	42	2,337	23	2,707,483	21
80 .....	1900	425	33	26,283,389	37	1,378	27	1,513,694	28
81 St. Paul, Minn.....	1905	614	25	30,401,282	37	2,108	26	2,202,237	28
82 .....	1900	537	24	25,659,214	41	2,079	20	1,874,656	23
83 Brockton, Mass.....	1905	201	65	15,336,123	87	890	58	930,644	07
84 .....	1900	186	04	9,635,201	86	604	62	639,372	07
85 East St. Louis, Ill.....	1905	94	87	19,900,160	74	847	61	915,154	08
86 .....	1900	61	93	7,940,054	01	265	91	282,308	90
87 Denver, Colo.....	1905	722	21	27,433,879	56	1,484	35	1,818,035	34
88 .....	1900	574	23	31,270,593	30	1,036	38	1,131,411	35
89 Kansas City, Mo.....	1905	612	26	32,126,674	45	2,001	29	2,119,781	30
90 .....	1900	585	22	22,991,858	48	1,183	31	1,164,418	36
91 Syracuse, N. Y.....	1905	638	23	38,740,651	34	1,728	33	1,990,187	33
92 .....	1900	630	21	28,928,312	31	1,264	29	1,315,821	32
93 Los Angeles, Cal.....	1905	814	19	28,181,418	53	2,004	28	1,990,838	32
94 .....	1900	534	20	10,045,095	84	717	53	671,300	65
95 Perth Amboy, N. J.....	1905	53	94	11,583,882	93	346	96	400,267	97
96 .....	1900	47	95	6,373,836	95	157	97	185,361	97
97 Akron, Ohio.....	1905	187	68	29,188,351	50	969	54	1,135,087	55
98 .....	1900	178	05	23,724,719	46	1,093	36	901,704	42
99 Joliet, Ill.....	1905	106	81	15,356,337	86	766	68	894,876	70
100 .....	1900	135	70	15,040,445	72	406	77	845,127	85
101 Camden, N. J.....	1905	298	48	31,092,497	46	1,201	43	1,460,307	42
102 .....	1900	322	43	16,592,585	70	658	58	681,839	04
103 Yonkers, N. Y.....	1905	106	81	33,731,085	39	464	80	720,599	81
104 .....	1900	107	81	12,239,123	80	308	84	437,488	78
105 Schenectady, N. Y.....	1905	103	83	22,050,746	60	771	67	915,025	69
106 .....	1900	83	87	13,605,702	77	303	87	266,030	89
107 Trenton, N. J.....	1905	312	45	41,623,232	32	1,043	51	1,342,640	46
108 .....	1900	246	56	24,624,592	43	739	52	903,253	48
109 Waterbury, Conn.....	1905	143	76	32,950,166	41	1,173	45	1,520,784	40
110 .....	1900	124	78	21,967,318	51	505	63	912,331	47
111 Troy, N. Y.....	1905	311	46	32,607,084	43	1,409	38	1,542,409	38
112 .....	1900	327	42	25,273,773	42	972	41	1,267,727	33
113 Grand Rapids, Mich.....	1905	389	39	25,915,861	60	1,481	36	1,685,017	37
114 .....	1900	382	39	22,691,677	49	1,148	35	1,136,524	38
115 Reading, Pa.....	1905	404	38	27,505,855	55	1,285	41	1,116,997	56
116 .....	1900	403	37	25,934,188	40	941	43	855,110	51
117 Holyoke, Mass.....	1905	179	71	37,150,103	36	720	75	1,018,209	63
118 .....	1900	158	73	25,935,200	39	580	65	810,458	53
119 Manchester, N. H.....	1905	155	74	25,248,460	61	606	80	680,973	82
120 .....	1900	166	72	21,539,585	52	308	84	441,000	77
121 Wilmington, Del.....	1905	247	61	33,226,991	40	1,112	49	1,269,812	48
122 .....	1900	262	52	26,489,873	36	922	44	1,050,933	40
123 New Bedford, Mass.....	1905	176	73	40,409,720	33	519	86	780,643	78
124 .....	1900	171	70	28,182,246	32	425	74	535,356	72
125 Newcastle, Pa.....	1905	72	92	18,508,474	78	572	82	630,685	84
126 .....	1900	71	88	12,952,616	78	184	95	239,052	94
127 Elizabeth, N. J.....	1905	124	79	23,504,094	64	740	71	896,090	73
128 .....	1900	141	75	15,951,174	69	584	64	800,585	54
129 Terre Haute, Ind.....	1905	188	67	10,126,426	97	464	89	507,371	91
130 .....	1900	143	74	8,454,007	89	326	82	334,771	86
131 Johnstown, Pa.....	1905	82	89	59,588,552	22	703	76	729,483	80
132 .....	1900	66	91	16,437,473	63	367	80	432,733	79
133 Portland, Oreg.....	1905	437	35	19,724,841	75	1,025	52	1,266,157	49
134 .....	1900	408	35	11,632,813	82	663	57	732,369	60

# URBAN MANUFACTURES.

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IN MANUFACTURES, WITH RANK FOR EACH ITEM: 1905 AND 1900—Continued.

WAGE-EARNERS AND WAGES.										MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS, INCLUDING CUSTOM WORK AND REPAIRING.	
Total.				Men 16 years and over.		Women 16 years and over.		Children under 16 years.		Amount.	Rank.	Amount.	Rank.	Amount.	Rank.
Average number.	Rank.	Wages.	Rank.	Average number.	Rank.	Average number.	Rank.	Average number.	Rank.						
19,492	28	\$9,470,809	27	13,977	28	5,066	28	449	39	\$4,361,894	35	\$22,334,003	41	\$44,586,519	35
17,038	30	7,885,474	30	11,561	32	5,211	22	236	53	2,209,437	40	17,286,974	41	33,530,276	39
26,836	19	10,098,871	25	14,478	26	11,117	12	1,241	14	3,923,076	41	26,095,619	35	43,473,105	36
30,046	16	10,742,158	20	15,848	23	13,082	9	1,716	7	2,878,588	35	18,070,072	39	30,102,710	31
14,586	41	7,493,858	37	10,320	44	3,990	38	276	50	3,552,008	44	25,116,539	37	42,407,064	37
11,070	47	5,451,265	44	7,726	48	3,277	37	67	81	1,776,880	52	16,772,856	45	29,092,103	47
14,777	39	7,563,285	36	11,082	36	2,476	54	319	46	5,384,504	27	19,701,162	49	40,435,531	38
13,787	37	6,027,535	38	11,078	31	1,800	58	249	50	3,716,828	30	18,252,017	37	34,748,433	37
21,437	26	11,203,550	23	16,224	22	4,714	31	499	32	4,280,928	36	18,521,105	55	30,666,118	39
17,594	28	8,520,471	25	12,851	26	4,510	28	233	54	2,655,074	37	16,136,516	48	34,899,437	36
17,093	34	8,693,024	31	14,183	27	2,708	50	112	70	5,057,006	29	18,504,735	50	39,596,773	40
14,408	30	6,909,204	31	12,013	29	2,277	49	118	68	3,026,303	32	14,330,075	54	31,615,293	43
14,363	43	7,210,757	44	10,673	42	3,668	40	32	92	4,473,388	33	19,487,002	51	38,318,704	41
13,019	40	5,323,517	45	9,005	38	3,154	38	200	47	2,959,230	35	15,912,682	49	30,956,079	46
13,899	46	8,833,379	30	10,169	45	3,617	43	103	73	2,561,013	60	22,552,556	40	37,790,982	42
10,206	50	5,775,471	41	7,576	49	2,649	44	71	78	1,036,770	73	16,333,301	50	24,855,362	53
7,012	70	3,718,086	78	6,588	68	318	89	106	71	1,870,060	78	30,225,640	29	37,586,108	43
5,139	85	2,364,112	87	4,802	75	99	90	238	52	535,797	90	27,791,704	26	32,400,957	41
9,072	63	6,711,285	48	8,476	54	1,048	72	148	62	2,862,011	53	20,999,833	44	36,800,410	44
8,500	57	5,235,019	40	7,530	50	848	73	113	70	1,898,772	48	24,472,275	29	37,006,171	34
11,039	54	5,020,442	53	8,444	55	2,313	56	282	49	4,002,518	39	19,525,121	50	35,573,040	45
9,699	52	4,568,019	52	6,885	57	2,597	45	217	56	2,097,481	42	12,531,026	63	23,588,953	58
14,578	42	7,129,707	45	11,463	37	2,882	48	233	53	4,250,826	38	16,171,650	65	34,823,751	46
11,809	45	5,303,407	46	9,520	39	2,060	54	229	55	2,944,374	34	12,548,331	62	26,546,297	50
10,424	60	7,088,175	46	8,954	51	1,306	66	164	59	2,741,413	55	18,680,152	54	34,814,475	47
5,173	84	2,600,304	82	4,046	88	982	60	145	62	1,010,803	74	8,087,026	87	15,133,606	83
3,050	93	1,827,055	95	3,412	93	471	86	67	83	864,001	97	30,316,381	28	34,800,402	48
2,005	98	910,522	100	1,959	97	34	98	12	95	290,999	99	11,346,833	68	14,061,072	91
9,817	61	4,085,884	60	8,107	59	1,575	64	135	66	4,443,768	34	20,647,353	45	34,004,243	49
8,259	59	3,614,800	62	6,697	58	1,497	63	65	82	1,684,942	57	12,719,788	60	22,015,643	64
6,187	85	3,902,268	72	5,902	76	273	90	12	99	1,861,102	79	21,705,492	42	33,788,700	50
5,792	80	3,548,330	83	5,661	65	98	91	33	92	1,527,439	61	17,192,915	43	26,131,625	52
12,661	49	6,097,913	52	9,636	47	2,522	52	503	31	2,909,320	51	20,422,049	47	33,587,273	51
7,742	64	3,216,043	66	5,465	67	2,004	55	273	45	1,285,679	67	10,441,930	70	17,960,954	73
9,779	62	4,518,547	64	6,022	74	3,677	39	80	79	2,514,501	63	23,329,973	38	33,548,088	52
7,555	66	3,293,587	65	4,543	81	2,746	42	266	46	926,603	78	9,541,473	76	17,303,090	75
14,310	44	9,382,390	28	13,288	31	984	73	44	88	1,592,012	84	16,497,228	64	33,084,451	53
8,494	58	4,065,627	50	7,474	51	946	70	74	76	575,780	86	9,625,064	75	17,604,859	74
14,252	45	7,000,731	47	11,247	39	2,518	53	487	34	2,633,047	59	17,692,467	59	32,719,945	54
13,138	39	6,093,316	39	10,525	36	2,310	48	303	43	1,865,553	49	16,581,063	47	28,458,068	49
15,406	37	8,015,798	34	10,948	41	4,120	37	338	45	2,546,592	61	17,770,142	58	32,367,359	55
13,225	38	6,691,467	33	9,411	41	3,473	33	341	40	1,312,507	64	18,202,221	38	30,330,300	45
19,114	29	7,852,718	35	7,730	61	11,181	11	203	55	5,842,341	25	13,746,280	75	31,800,829	56
22,033	21	8,570,008	23	7,422	52	15,207	5	304	42	2,504,369	39	11,462,155	66	28,738,800	48
15,709	36	7,392,748	40	13,589	29	1,934	59	186	58	3,477,597	45	14,571,758	70	31,032,589	57
12,020	41	5,297,720	47	11,492	33	1,327	67	110	71	1,770,163	53	11,120,944	69	22,228,487	63
18,315	30	7,366,161	41	12,349	35	4,473	34	1,493	11	2,962,103	49	16,824,030	62	30,848,175	58
16,892	31	6,582,602	34	12,537	27	3,344	35	1,011	16	4,678,141	23	16,996,018	44	32,082,061	40
14,685	40	6,693,000	49	8,205	57	5,413	24	1,067	18	2,946,250	50	16,578,886	63	30,731,332	59
12,510	44	5,253,816	48	6,922	56	5,002	23	595	28	1,760,856	54	12,705,955	61	24,002,610	56
17,579	33	7,322,934	42	9,802	46	7,438	20	339	44	1,855,529	80	18,706,986	53	30,696,926	60
17,862	27	6,468,480	35	9,422	40	7,941	18	499	32	1,483,434	62	13,803,207	56	24,628,345	55
13,554	47	6,530,629	51	11,286	38	1,809	60	459	37	1,909,781	76	18,173,070	57	30,390,039	61
14,408	35	6,697,403	32	12,428	28	1,597	60	473	35	1,439,298	63	17,875,835	40	30,596,810	44
17,855	31	7,250,819	43	10,351	43	6,550	22	954	21	2,164,988	68	16,091,176	66	29,469,349	62
15,263	34	6,123,142	37	8,826	43	5,599	21	928	19	1,569,781	60	11,783,379	65	23,397,491	60
5,729	88	3,603,080	80	5,536	81	163	94	30	95	1,529,297	86	21,529,945	43	29,433,635	63
4,520	89	2,988,162	70	4,308	84	68	95	63	83	445,875	93	13,146,079	57	20,015,798	69
12,335	50	7,397,978	39	11,161	40	1,087	71	87	75	1,417,406	88	16,981,614	61	20,300,801	64
9,498	53	5,475,852	43	8,730	44	711	76	57	86	1,288,016	66	12,912,537	59	22,861,375	62
6,551	81	3,465,434	82	5,707	78	726	79	118	69	13,372,403	15	10,393,753	92	20,291,654	65
4,679	87	1,952,782	92	3,731	90	937	71	11	96	7,368,602	9	7,368,602	93	26,295,629	51
6,914	80	3,804,993	74	6,591	67	256	92	67	83	3,038,850	47	19,754,765	48	28,891,806	66
5,600	81	2,965,465	71	5,474	66	44	97	82	75	1,799,739	50	13,908,438	55	21,364,745	65
8,171	74	5,342,166	58	7,110	63	973	74	88	74	1,900,416	77	17,024,303	60	28,651,321	67
5,380	82	2,703,569	76	4,589	79	665	78	126	67	850,346	82	10,177,328	72	16,903,707	77

## MANUFACTURES.

TABLE CCXLI.—COMPARATIVE SUMMARY FOR ONE HUNDRED PRINCIPAL CITIES

CITY.	Census.	ESTABLISH- MENTS.		CAPITAL.		SALARIED OFFICIALS, CLERKS, ETC.			
		Number.	Rank.	Amount.	Rank.	Number.	Rank.	Salaries.	Rank.
135 Anaconda, Mont.....	1905	17	99	13,728,456	90	224	100	461,273	93
136 .....	1900	17	99	16,983,926	62	93	99	181,015	98
137 Duquesne, Pa.....	1905	15	100	16,591,380	81	328	97	387,756	98
138 .....	1900	7	100	14,350,200	74	76	100	88,167	100
139 Richmond, Va.....	1905	281	52	31,952,847	47	1,085	50	1,184,174	52
140 .....	1900	262	52	19,203,927	66	976	40	1,076,774	39
141 Hartford, Conn.....	1905	340	41	28,358,583	52	1,383	39	1,602,880	36
142 .....	1900	322	43	28,057,265	33	1,149	34	1,374,200	31
143 Springfield, Mass.....	1905	296	49	24,081,090	63	1,188	44	1,499,185	41
144 .....	1900	278	50	16,071,199	67	848	46	982,007	43
145 Pawtucket, R. I.....	1905	186	70	27,178,438	57	737	72	1,030,791	61
146 .....	1900	191	63	20,451,300	53	495	70	715,465	61
147 Atlanta, Ga.....	1905	294	51	21,631,162	70	1,303	50	1,360,821	44
148 .....	1900	196	62	14,603,338	73	692	44	758,593	57
149 Seattle, Wash.....	1905	467	33	22,343,545	66	727	74	852,592	74
150 .....	1900	352	41	7,681,598	92	623	60	560,698	70
151 Haverhill, Mass.....	1905	320	43	10,305,950	95	551	84	541,599	80
152 .....	1900	390	38	6,357,505	96	479	71	366,498	84
153 Wheeling, W. Va.....	1905	196	66	18,227,622	79	589	81	676,666	83
154 .....	1900	178	65	12,274,707	79	407	76	409,372	81
155 Nashville, Tenn.....	1905	263	56	16,463,238	82	1,139	48	1,165,067	53
156 .....	1900	237	59	11,873,734	81	911	45	789,173	55
157 McKeesport, Pa.....	1905	75	91	16,285,952	83	696	77	777,862	79
158 .....	1900	67	90	15,088,223	71	473	72	445,337	76
159 Somerville, Mass.....	1905	78	90	10,263,802	96	397	94	431,171	95
160 .....	1900	85	86	9,503,426	87	224	93	230,591	95
161 Utica, N. Y.....	1905	333	42	21,184,033	71	937	57	1,084,352	57
162 .....	1900	311	45	17,898,119	60	788	49	735,625	59
163 Tacoma, Wash.....	1905	237	63	13,268,613	92	523	85	598,067	86
164 .....	1900	174	69	6,790,332	93	288	80	322,420	87
165 Passaic, N. J.....	1905	95	86	28,611,310	51	776	66	1,072,905	59
166 .....	1900	70	89	18,377,299	50	403	78	622,044	68
167 Memphis, Tenn.....	1905	296	49	14,130,020	89	853	60	1,058,453	60
168 .....	1900	223	60	9,766,846	85	452	73	552,002	71
169 Scranton, Pa.....	1905	258	59	19,160,787	77	746	69	840,262	76
170 .....	1900	247	55	18,983,780	55	550	67	709,048	62
171 Albany, N. Y.....	1905	490	29	16,676,369	80	1,150	46	1,376,639	43
172 .....	1900	511	27	18,010,515	58	761	51	914,402	46
173 Erie, Pa.....	1905	267	54	24,114,233	62	734	73	870,901	72
174 .....	1900	260	54	19,062,773	54	617	61	655,307	66
175 Woonsocket, R. I.....	1905	103	83	15,461,523	85	367	95	455,681	94
176 .....	1900	104	82	13,954,136	76	162	96	256,451	93
177 Evansville, Ind.....	1905	275	53	14,947,535	88	790	64	843,598	75
178 .....	1900	273	51	9,428,387	88	561	66	595,547	69
179 Ansonia, Conn.....	1905	49	95	7,625,864	99	305	98	377,059	99
180 .....	1900	49	94	6,239,962	98	186	94	202,288	96
181 Washington, D. C.....	1905	482	31	20,199,783	73	1,006	53	1,206,609	51
182 .....	1900	491	28	17,960,498	59	957	42	871,882	49
183 Harrisburg, Pa.....	1905	177	72	16,065,510	84	482	88	503,283	92
184 .....	1900	175	68	7,906,663	90	377	79	381,092	83
185 Allentown, Pa.....	1905	259	58	13,557,559	91	569	83	529,853	90
186 .....	1900	216	61	11,342,770	83	356	81	310,309	88
187 Niagara Falls, N. Y.....	1905	85	88	27,115,761	58	504	87	591,434	88
188 .....	1900	93	84	14,344,446	75	326	82	384,087	82
189 Chester, Pa.....	1905	131	78	22,070,140	68	431	92	607,146	85
190 .....	1900	121	79	17,672,108	61	307	86	485,674	74
191 Racine, Wis.....	1905	148	75	26,433,684	59	1,239	42	1,270,660	47
192 .....	1900	135	76	16,205,631	65	845	47	837,650	52
193 Cedar Rapids, Iowa.....	1905	134	77	8,607,349	98	431	92	409,499	96
194 .....	1900	89	85	5,758,880	99	295	88	267,913	92
195 Steelton, Pa.....	1905	18	98	19,642,853	76	440	91	594,240	87
196 .....	1900	18	98	6,266,068	97	271	90	274,189	91
197 Dallas, Tex.....	1905	247	61	10,891,084	94	830	62	828,131	77
198 .....	1900	177	67	6,461,684	94	500	69	515,333	73
199 Watertown, Mass.....	1905	20	97	5,168,661	100	225	99	235,018	100
200 .....	1900	27	97	4,168,613	100	119	98	163,940	99

## URBAN MANUFACTURES.

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IN MANUFACTURES, WITH RANK FOR EACH ITEM: 1905 AND 1900—Continued.

WAGE-EARNERS AND WAGES.										MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS, INCLUDING CUSTOM WORK AND REPAIRING.	
Total.				Men 16 years and over.		Women 16 years and over.		Children under 16 years.		Amount.	Rank.	Amount.	Rank.	Amount.	Rank.
Average number.	Rank.	Wages.	Rank.	Average number.	Rank.	Average number.	Rank.	Average number.	Rank.						
2,086	100	\$2,560,804	92	2,056	100	5	99	25	97	\$2,297,087	66	\$20,479,630	46	\$28,581,530	68
2,392	96	2,088,939	89	2,375	94	6	99	11	96	309,334	98	11,058,388	64	21,002,055	66
2,731	99	1,000,580	94	2,687	97	1	100	43	89	966,825	94	23,144,659	39	28,404,303	60
1,487	100	1,098,756	97	1,483	99			4	99	434,469	95	14,597,470	53	20,333,476	67
12,883	48	4,541,803	63	9,043	50	3,645	41	195	56	5,363,979	28	13,102,042	79	28,202,607	70
12,868	42	3,973,704	59	8,400	46	3,821	32	647	24	5,449,966	20	10,375,140	71	23,048,353	61
11,221	53	6,592,235	50	9,386	48	1,754	61	81	77	2,795,038	54	11,487,130	85	25,973,651	71
10,677	49	5,950,080	40	9,190	42	1,426	65	61	85	1,946,342	44	11,369,033	67	23,828,961	57
10,523	59	5,645,289	55	7,908	60	2,315	55	300	47	3,026,444	48	12,379,844	81	25,860,250	72
8,162	60	3,974,686	58	5,827	63	2,195	50	130	65	1,585,014	59	8,892,245	80	18,155,071	72
12,054	51	5,100,309	59	6,504	72	4,780	30	770	23	2,346,167	64	14,111,583	73	25,846,899	73
10,712	48	4,331,007	55	5,848	62	3,928	31	936	18	1,752,847	55	9,976,710	73	19,271,582	70
11,891	52	4,434,573	60	8,624	52	2,539	51	728	25	2,639,093	57	13,441,248	77	25,745,600	74
7,966	63	2,597,393	83	5,134	72	2,062	53	770	23	1,174,797	70	7,442,973	91	14,418,834	80
6,300	83	4,318,080	68	5,768	77	596	82	31	94	2,134,294	71	14,357,808	71	25,406,574	75
4,440	90	2,681,609	77	4,130	87	248	87	62	84	824,245	83	8,863,835	81	15,322,531	81
9,574	64	4,817,892	61	6,608	66	2,886	47	80	79	1,632,236	83	14,257,243	72	24,440,504	76
9,761	51	4,538,120	53	6,605	59	3,100	39	56	87	1,292,454	65	14,994,402	51	23,418,790	59
7,215	76	3,842,659	76	5,662	79	1,185	69	368	41	2,312,259	65	13,806,723	74	23,207,475	77
6,100	76	2,678,530	78	4,518	82	1,537	61	135	64	1,796,777	51	8,405,903	83	15,074,345	84
8,435	72	3,343,166	84	6,555	70	1,689	63	191	57	2,636,082	58	13,497,809	76	23,109,601	78
6,726	70	2,275,801	88	4,814	74	1,637	61	375	37	1,205,071	69	9,027,418	77	15,301,096	82
8,848	68	5,521,306	56	8,605	53	102	97	141	64	1,378,272	89	12,309,484	82	23,054,412	79
7,213	68	4,147,087	57	6,987	55	50	96	176	60	375,877	96	21,834,873	33	36,058,447	35
3,474	94	1,752,611	97	3,114	94	319	88	41	90	945,966	95	19,175,935	52	22,955,197	80
3,528	92	1,720,818	93	3,154	92	334	86	40	89	500,704	91	16,721,093	46	20,064,519	68
10,882	57	4,477,092	65	6,450	73	4,163	36	269	52	2,519,205	62	12,773,547	80	22,880,317	81
8,898	55	3,275,527	64	5,270	71	3,027	40	604	27	1,917,839	46	8,193,908	85	16,470,327	79
4,892	90	3,208,531	88	4,675	89	209	93	8	100	1,215,726	91	15,836,685	68	22,893,169	82
3,552	91	1,954,915	91	3,430	91	87	93	35	90	497,228	92	6,340,670	96	10,301,353	97
11,000	55	3,806,008	73	5,315	85	5,232	26	453	38	2,249,836	67	13,109,651	78	22,782,725	83
6,399	73	2,374,445	86	4,012	89	2,176	51	211	57	1,075,552	71	7,417,998	92	12,804,805	93
8,153	75	3,861,669	75	7,326	62	671	80	156	60	1,967,973	75	11,992,419	84	21,346,817	84
6,626	71	2,792,442	74	6,046	61	444	84	136	63	887,341	80	7,870,251	88	14,233,483	90
10,912	56	4,428,077	67	6,531	71	3,180	45	1,201	15	2,047,236	73	11,253,248	86	20,453,285	85
11,139	40	4,387,700	54	7,370	53	2,727	43	1,042	15	1,590,398	58	17,220,172	42	24,741,837	54
8,970	67	4,209,355	70	5,993	75	2,926	46	87	75	2,800,607	52	9,376,627	95	20,208,715	86
8,106	61	3,852,485	61	6,107	60	1,900	57	90	74	2,030,990	43	7,506,902	89	17,268,090	76
9,153	65	4,703,427	62	8,200	58	742	78	211	54	1,545,711	85	10,102,257	93	19,911,507	87
8,032	62	3,024,783	60	7,261	54	522	80	249	50	1,019,231	75	8,207,866	84	16,402,886	78
8,672	69	3,550,343	81	5,195	87	2,881	49	596	29	916,236	96	10,578,710	90	19,260,537	88
7,591	65	2,853,780	73	4,573	80	2,533	40	485	33	546,416	89	7,169,244	94	14,744,900	88
8,596	70	3,838,115	77	6,696	65	1,559	65	341	43	2,129,345	72	10,722,329	88	19,201,716	89
6,284	75	2,450,790	85	4,726	76	1,429	64	129	66	881,119	81	6,545,126	95	12,167,524	94
3,394	96	1,683,152	98	2,937	95	433	87	24	98	779,422	98	15,307,006	69	19,132,455	90
3,288	93	1,707,317	94	2,788	93	496	81	4	90	329,691	97	14,956,288	52	18,515,043	71
6,299	84	3,658,370	79	5,614	80	611	81	74	81	2,724,840	56	7,731,971	98	18,359,159	91
6,155	77	3,022,906	60	5,360	68	722	75	73	77	1,941,118	45	7,475,216	90	16,426,408	80
8,395	73	3,935,350	71	6,587	69	1,727	62	81	77	1,001,563	93	10,608,146	89	17,146,338	92
6,439	72	2,528,472	84	4,678	77	1,664	59	97	73	560,317	88	9,005,283	78	14,995,827	85
9,004	66	3,320,457	85	4,766	88	3,626	42	612	28	1,521,030	87	9,966,971	94	16,966,550	93
7,355	67	2,634,463	79	4,319	86	2,417	47	619	25	1,225,100	68	8,976,683	79	14,990,437	86
4,574	92	2,347,539	93	3,706	92	842	76	26	96	2,149,818	70	9,192,060	97	16,915,786	94
6,940	95	1,318,318	96	2,365	95	467	83	8	98	756,766	85	4,888,318	99	8,540,184	99
7,061	77	3,416,843	83	5,506	82	1,272	68	283	48	1,153,064	92	10,422,066	91	16,644,842	95
6,972	60	3,131,184	67	5,291	70	1,386	66	295	44	1,042,993	72	8,570,732	82	14,940,165	87
6,504	82	3,155,086	90	5,453	83	946	75	105	72	3,127,746	46	7,142,942	99	16,458,965	96
6,138	78	2,711,531	75	4,964	73	997	68	177	59	961,114	76	5,926,406	97	11,676,150	95
3,259	98	1,404,822	100	2,598	98	527	84	134	67	722,516	99	12,279,506	83	16,279,706	97
2,374	97	986,079	98	1,896	98	361	85	117	69	441,421	94	8,163,335	86	11,135,435	96
4,656	91	3,040,773	91	4,570	90	54	98	32	92	1,317,250	90	10,749,753	87	15,745,628	98
4,762	86	2,084,206	90	4,655	78	86	94	21	93	924,394	79	9,636,263	74	14,034,342	92
3,445	95	1,759,222	96	2,710	96	588	83	147	63	1,712,366	81	9,207,099	96	15,627,668	99
2,842	94	1,323,156	95	2,169	96	495	82	178	58	567,897	87	5,397,961	98	9,488,252	98
3,322	97	1,665,431	99	2,111	99	1,092	70	119	68	409,053	100	5,528,635	100	15,524,675	100
1,935	99	930,789	99	1,227	100	674	77	34	91	145,765	100	3,499,183	100	5,330,025	100

In the majority of the cities there have been but slight changes in standing. Some, however, have advanced rapidly, while the relative importance of others has declined. Perth Amboy, N. J., shows the greatest advance in rank according to value of products, from the ninety-first place in 1900 to forty-eighth at the census of 1905, a gain of forty-three places. On the other hand, the relative standing of McKeesport, Pa., in value of product declined from thirty-fifth to seventy-ninth, which was the most pronounced change in this respect. The greatest changes in relative rank are shown for the smaller cities.

The disparities in rank shown by the cities in the different items are due largely to the character of their predominating industries. For example, South Omaha, Nebr., ranks eighty-ninth in the average number of wage-earners and twenty-third in value of products. The principal industry of this city is slaughtering and meat packing. The establishments in this industry report a relatively small number of employees for a product of a given value, material being the principal element of cost. The standing of the city in number of employees is reduced accordingly, while its standing in value of products is advanced, because of the inclusion of the amount expended in the purchase of material. It follows that the value of products is not always a true indication of the relative importance of the manufacturing industries of a city. The value added to the cost of materials by labor and the various manufacturing processes is a better test of the relative importance of the city as a center of manufactures. While the exact amount added to the cost of materials can not be ascertained from the Census statistics, if the total cost of raw and partly manufactured materials were to be deducted from the value of products, the remainder would be generally a truer indication of this amount than can be obtained by any other method. When the value of products, as reported by the different cities, is treated in this manner, there is a considerable change in the ranking of certain cities, as follows: South Omaha would drop from twenty-third to eighty-fifth; Omaha from twenty-eighth to sixty-sixth; and East St. Louis from forty-third to eighty-ninth. In contradistinction other cities would rise in rank, as, for example: Terre Haute from sixty-fifth to thirty-third; Richmond from seventieth to forty-sixth; and Hartford from seventy-first to forty-ninth.

To indicate the states in which the greatest concentration in urban districts occurred, Table CCXLII is presented, which shows, for the censuses of 1900 and 1905, the totals for each state and geographic division, for all cities and towns with a population of 8,000 and over in each state and division, and for the districts which are outside the cities, together with the percentages which the respective totals in the urban and rural districts constitute of the corresponding totals for the state or division.

This table indicates the tendency in the states toward a wider distribution of manufactures. It will be seen that in some states, where manufactures are comparatively unimportant, there has been an apparent increase in the proportions in cities, and that in some other states the proportions for the two censuses are about the same.

Of the 13 states reporting the largest gross value of products in 1905, a decrease in the proportion of urban manufactures is shown for 9 states in capital invested, for 7 in wages paid, for 8 in materials used, and for 7 in the value of products.

Urban and rural statistics are presented separately in Table CCXLII for 44 of the 51 states and territories, and of these 44, a decrease in the proportion of value of products for urban manufactures is shown for 25. Of the remaining 7 states and territories, the District of Columbia is considered as purely urban, while Arizona, Idaho, Indian Territory, Nevada, New Mexico, and Alaska are purely rural, none of them containing a city of 8,000 population and over at the census of 1900.

Of the minor geographic divisions, that of the Pacific shows a uniform movement in the proportion of the value of products manufactured in urban districts, each of the states comprising the division showing an increase, while each state in the Southern North Atlantic shows a decrease.

Measured by the value of products, North Dakota shows the greatest proportional decrease in urban manufactures, the percentages decreasing from 19.7 at the census of 1900 to 11.4 at the census of 1905. The statistics for Florida indicate the most pronounced exception to the general rule of wider distribution of manufactures, the proportion of the value of products of urban manufactures increasing from 38.1 per cent in 1900 to 45.3 at the census of 1905.

Of the main geographic divisions, the greatest concentration in cities is shown for the North Atlantic states, and is due primarily to the magnitude of the manufactures in New York city, which reported 62.7 per cent of the total value of products for the state in 1900 and 61.3 per cent at the census of 1905. The value of products of manufactures in the 46 cities of the state formed 87.4 and 86.9 per cent of the totals for the state at the last two censuses, respectively, the proportions being considerably in excess of those for any of the other large manufacturing states.

Next to the North Atlantic division, the greatest concentration is shown for the North Central states, where manufactures have increased very rapidly during the past twenty-five years. In this division the concentration also is due primarily to the conditions in a single state—Illinois—which, next to New York, shows the highest percentages for urban manufactures. The city of Chicago contains a large proportion of the manufactures of the state of Illinois and accounts for the large proportion in the urban districts.



The territory included in the urban districts should also be considered in connection with the percentages shown in this table. It is probable that in the New England states a much larger proportion of the total area is included in the urban districts than in any of the other subdivisions. The 102 places for which the manufactures are considered as urban in this division include some towns containing areas that are rural rather than urban in character. Thus the larger proportion of the territory in Massachusetts and Rhode Island which is included by the census in the urban districts explains in part the relatively large percentage of manufactures in these districts.

Mining and stock raising are the principal industries of the Basin and Plateau states, and the manufactures are comparatively unimportant. This geographic division contains only 2 cities that had a population of 8,000 and over at the Twelfth Census, and the majority of the manufactures are located in

the smaller places. The products of the establishments in the urban districts of the division represent only 15 per cent of the total for the division at the census of 1905, which is considerably less than the proportion for any of the other divisions. While the proportion of the value of products represented by the establishments in the urban districts of the division increased from 13.9 to 15 per cent, the proportion of capital invested increased but two-tenths of 1 per cent.

One of the principal features of the table is the uniformity with which the concentration for value of products has exceeded the concentration in the number of establishments. This greater concentration is shown in every state except Alabama, Colorado, Rhode Island, and Utah, and is due to the fact that the average establishment in the urban districts is much larger than the average establishment in the rural districts.

## MANUFACTURES.

TABLE CCXLII.—COMPARATIVE SUMMARY—MANUFACTURES IN URBAN AND RURAL

		NUMBER OF ESTABLISHMENTS.		CAPITAL.		WAGE-EARNERS AND WAGES.	
		1905	1900	1905	1900	Average number.	
						1905	1900
1	United States.....	216,262	207,562	\$12,686,265,673	\$8,978,825,200	5,470,321	4,715,023
2	Urban.....	113,101	106,513	8,566,221,283	6,382,432,475	3,624,829	3,154,911
3	Per cent of total.....	52.3	51.3	67.5	71.1	66.3	66.9
4	Rural.....	103,161	101,049	4,120,044,390	2,596,392,725	1,845,492	1,560,112
5	Per cent of total.....	47.7	48.7	32.5	28.9	33.7	33.1
6	North Atlantic division.....	89,978	88,410	6,613,352,082	4,958,248,675	2,827,317	2,456,747
7	Urban.....	50,037	57,136	4,746,207,573	3,608,535,301	2,073,737	1,817,645
8	Per cent of total.....	55.6	64.6	71.8	74.0	73.3	74.0
9	Rural.....	30,941	31,274	1,867,054,509	1,250,713,274	753,580	639,102
10	Per cent of total.....	34.4	35.4	28.2	25.4	26.7	26.0
11	New England.....	22,279	22,576	1,870,995,405	1,507,620,619	940,762	851,903
12	Urban.....	13,150	13,288	1,338,308,409	1,080,453,592	661,791	596,998
13	Per cent of total.....	59.0	58.9	71.5	72.1	70.3	69.9
14	Rural.....	9,129	9,288	532,626,936	421,176,027	278,961	256,905
15	Per cent of total.....	41.0	41.1	28.5	27.9	29.7	30.1
16	Maine.....	3,145	2,878	143,707,750	114,007,715	74,958	69,014
17	Urban.....	696	707	41,262,071	38,890,934	26,194	25,832
18	Per cent of total.....	22.1	24.6	28.7	34.1	34.9	37.0
19	Rural.....	2,449	2,171	102,445,679	75,140,781	48,764	44,082
20	Per cent of total.....	77.9	75.4	71.3	65.9	65.1	63.0
21	New Hampshire.....	1,618	1,771	109,495,072	92,146,025	65,366	67,646
22	Urban.....	543	572	68,278,077	58,050,728	37,500	37,904
23	Per cent of total.....	33.6	32.3	62.4	63.0	57.4	58.0
24	Rural.....	1,075	1,199	41,216,395	34,089,297	27,866	29,742
25	Per cent of total.....	66.4	67.7	37.6	37.0	42.6	44.0
26	Vermont.....	1,099	1,038	62,658,741	43,499,633	33,106	28,179
27	Urban.....	223	285	9,003,097	7,085,574	6,301	5,003
28	Per cent of total.....	13.1	14.7	14.4	17.7	19.0	19.9
29	Rural.....	1,476	1,053	53,655,644	36,414,059	26,805	22,576
30	Per cent of total.....	86.9	85.3	85.6	82.3	81.0	80.1
31	Massachusetts.....	10,723	10,929	965,948,887	781,867,715	488,359	438,234
32	Urban.....	8,338	8,562	806,476,244	651,913,300	397,757	355,485
33	Per cent of total.....	77.8	77.8	83.5	83.4	81.4	81.1
34	Rural.....	2,385	2,427	159,472,643	129,954,409	90,602	82,749
35	Per cent of total.....	22.2	22.2	16.5	16.6	18.6	18.9
36	Rhode Island.....	1,617	1,078	215,901,375	176,001,006	97,318	88,197
37	Urban.....	1,350	1,385	174,071,308	142,886,012	77,001	71,151
38	Per cent of total.....	83.5	82.5	80.6	80.8	80.1	80.7
39	Rural.....	267	293	41,830,067	34,015,594	19,357	17,046
40	Per cent of total.....	16.5	17.5	19.4	19.2	19.9	19.3
41	Connecticut.....	3,477	3,382	373,283,580	299,206,925	181,605	150,733
42	Urban.....	2,000	1,837	230,275,872	187,051,038	110,078	99,123
43	Per cent of total.....	57.5	54.3	64.1	62.5	63.9	62.0
44	Rural.....	1,477	1,545	134,007,708	112,155,887	65,527	60,610
45	Per cent of total.....	42.5	45.7	35.9	37.5	36.1	38.0
46	Southern North Atlantic.....	67,699	65,834	4,742,356,677	3,450,618,056	1,880,565	1,604,844
47	Urban.....	45,887	43,848	3,407,329,104	2,612,081,709	1,411,946	1,222,547
48	Per cent of total.....	67.8	66.6	71.9	74.8	74.8	76.2
49	Rural.....	21,812	21,986	1,334,427,573	838,537,247	474,619	382,297
50	Per cent of total.....	32.2	33.4	28.1	24.3	25.2	23.8
51	New York.....	37,194	35,957	2,031,450,515	1,523,502,651	856,947	726,909
52	Urban.....	28,296	26,765	1,656,324,224	1,281,662,797	723,201	614,441
53	Per cent of total.....	76.1	74.4	81.5	84.1	84.4	84.5
54	Rural.....	8,898	9,192	375,135,291	241,839,854	133,746	112,468
55	Per cent of total.....	23.9	25.6	18.5	15.9	15.6	15.5
56	New Jersey.....	7,010	6,415	715,980,174	477,301,565	266,330	213,975
57	Urban.....	4,704	4,324	520,209,218	383,184,918	200,711	163,037
58	Per cent of total.....	67.1	67.4	74.0	80.3	75.4	76.2
59	Rural.....	2,306	2,091	185,790,956	94,116,647	65,625	50,938
60	Per cent of total.....	32.9	32.6	26.0	19.7	24.6	23.8
61	Pennsylvania.....	23,495	23,462	1,995,836,988	1,449,814,740	763,282	663,960
62	Urban.....	12,887	12,759	1,222,335,602	947,233,994	488,034	445,069
63	Per cent of total.....	54.8	54.4	61.2	65.3	63.9	67.0
64	Rural.....	10,608	10,703	773,501,326	502,580,746	275,248	218,891
65	Per cent of total.....	45.2	45.6	38.8	34.7	36.1	33.0
66	South Atlantic division.....	19,564	19,144	930,419,780	583,328,459	522,611	453,344
67	Urban.....	5,813	5,556	420,057,966	294,793,179	202,758	183,880
68	Per cent of total.....	29.7	29.0	45.1	50.5	38.8	40.1
69	Rural.....	13,751	13,588	510,361,814	288,535,280	319,853	274,454
70	Per cent of total.....	70.3	71.0	54.9	49.5	61.2	59.9
71	Northern South Atlantic.....	10,261	10,020	507,813,384	347,309,940	242,901	220,190
72	Urban.....	4,217	4,312	317,343,170	224,371,994	141,039	134,655
73	Per cent of total.....	41.1	43.0	62.5	64.6	58.0	61.2
74	Rural.....	6,044	5,708	190,470,214	122,937,946	101,862	85,535
75	Per cent of total.....	58.9	57.0	37.5	35.4	42.0	38.8
76	Delaware.....	631	633	50,925,630	38,791,402	18,475	20,562
77	Urban.....	247	262	33,226,991	26,489,873	13,554	14,498
78	Per cent of total.....	39.1	41.4	65.2	68.3	73.4	70.5
79	Rural.....	384	371	17,698,639	12,301,529	4,921	6,064
80	Per cent of total.....	60.9	58.6	34.8	31.7	26.6	29.5

## URBAN MANUFACTURES.

ccxciii

DISTRICTS, BY GEOGRAPHIC DIVISIONS, STATES, AND TERRITORIES: 1905 AND 1900.

WAGE-EARNERS AND WAGES—continued.		MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS.		
Wages.								
1905	1900	1905	1900	1905	1900	1905	1900	
\$2,611,540,532	\$2,009,735,799	\$1,455,010,473	\$905,600,225	\$8,503,049,756	\$6,577,614,074	\$14,802,147,087	\$11,411,121,122	1
1,796,277,612 68.8	1,417,123,370 70.5	1,110,261,278 70.3	722,268,983 79.8	5,840,805,532 68.8	4,650,450,784 70.8	10,310,285,093 69.7	8,141,364,055 71.3	2
815,202,920 31.2	502,612,420 20.5	344,758,195 23.7	183,301,242 20.2	2,654,144,224 31.2	1,921,154,200 29.2	4,491,862,024 30.3	3,269,757,067 28.7	3
1,365,194,774	1,097,038,300	702,590,087	445,426,588	4,078,268,071	3,215,441,532	7,244,264,373	5,735,007,036	4
1,015,508,704 74.4	830,063,771 75.7	509,888,475 81.1	306,931,261 82.4	3,020,799,372 74.2	2,448,349,342 76.1	5,450,269,504 75.2	4,386,112,802 76.5	5
340,620,070 25.6	206,974,628 24.3	132,711,212 18.9	78,495,327 17.6	1,051,468,609 25.8	767,092,190 23.9	1,793,994,809 24.8	1,348,954,234 23.5	6
430,050,232	367,674,353	167,203,971	109,963,995	1,116,272,902	904,036,980	2,025,998,437	1,660,348,100	7
314,123,026 71.5	264,002,727 71.8	128,685,592 77.0	86,002,358 78.2	812,260,693 72.8	655,834,804 72.5	1,475,987,505 72.9	1,206,013,734 72.6	8
124,926,600 28.5	103,671,026 28.2	38,518,379 23.0	23,961,637 21.8	304,012,209 27.2	248,202,176 27.5	550,010,932 27.1	454,334,366 27.4	9
32,601,759 10,937,422 33.5	25,730,735 10,020,405 38.9	12,485,167 4,335,513 34.7	7,528,390 3,080,532 40.9	80,042,090 25,955,997 32.4	61,210,327 21,083,305 34.4	144,020,197 46,857,522 32.5	112,959,098 40,424,028 35.8	10
21,754,337 66.5	15,710,240 61.1	8,149,054 65.3	4,447,867 59.1	54,086,093 67.6	40,127,022 65.6	97,162,675 67.5	72,535,070 64.2	11
27,693,203 16,269,070 58.7	25,840,631 15,015,293 58.1	9,006,821 5,026,963 62.5	6,151,892 4,253,000 69.1	73,216,387 44,528,066 60.8	60,163,380 35,306,436 58.7	123,610,904 73,693,767 59.5	107,590,803 62,536,626 58.1	12
11,424,133 41.3	10,834,838 41.9	3,379,853 37.5	1,898,883 30.9	28,688,321 39.2	24,856,944 41.3	50,017,137 40.5	45,054,177 41.9	13
15,221,050 3,208,522 21.1	11,426,548 2,507,321 22.7	4,923,366 1,433,298 29.1	3,444,175 1,300,178 37.8	32,429,852 5,874,850 18.1	26,384,812 4,012,882 18.6	63,083,611 12,251,656 19.4	51,515,228 10,786,092 20.9	14
12,012,537 78.9	8,829,227 77.3	3,490,068 70.9	2,143,997 62.2	26,555,002 81.9	21,471,930 81.4	50,831,955 80.6	40,729,136 79.1	15
232,388,946 100,241,770 81.9	195,278,276 159,202,765 81.5	93,840,185 81,837,417 87.2	62,392,263 55,494,453 88.9	626,410,431 518,476,129 82.8	498,655,033 407,691,316 81.8	1,124,092,051 931,441,989 82.0	907,026,439 745,258,444 82.1	16
42,147,170 18.1	30,075,511 18.5	12,002,708 12.8	6,897,810 11.1	107,934,302 17.2	90,963,717 13.2	192,650,062 17.1	162,367,965 17.9	17
43,112,637 35,106,720 81.4	35,995,101 29,341,906 81.5	14,623,430 12,342,914 84.4	11,098,680 9,076,395 81.8	112,872,261 90,762,218 80.4	87,051,780 72,876,934 82.9	202,109,583 165,514,471 81.9	165,550,382 137,208,737 82.9	18
8,005,008 18.6	6,653,195 18.5	2,280,516 15.6	2,022,285 18.2	22,110,043 19.6	15,074,846 17.1	36,595,112 18.1	28,341,645 17.1	19
87,942,628 58,360,113 66.4	73,394,062 47,824,947 65.2	32,325,002 23,109,487 71.5	19,348,586 12,797,791 66.1	191,301,881 126,663,433 66.2	169,671,648 113,963,931 67.2	369,082,091 249,328,100 66.7	315,106,150 209,799,807 66.6	20
20,582,515 33.6	25,509,115 34.8	9,215,515 28.5	6,550,795 33.9	64,638,448 33.8	55,707,717 33.8	122,753,901 33.3	105,306,343 33.4	21
926,144,542	729,304,046	535,395,716	335,462,593	2,961,995,169	2,311,404,552	5,218,265,936	4,074,718,936	22
701,445,078 75.7	566,061,044 77.6	441,202,883 82.4	280,928,093 83.7	2,214,538,679 74.8	1,792,514,538 76.2	3,974,282,059 76.2	3,180,090,068 78.0	23
224,699,104 24.3	103,303,002 22.4	94,192,833 17.6	54,533,090 16.3	747,456,400 25.2	518,800,014 22.4	1,243,983,877 23.8	894,619,865 22.0	24
430,014,851 369,228,975 85.9	337,323,585 291,373,138 86.4	301,575,788 277,030,197 91.9	185,164,066 170,527,217 86.0	1,348,603,286 1,159,594,155 86.0	1,018,377,186 884,675,362 86.9	2,488,345,570 2,162,393,701 86.9	1,871,830,872 1,636,586,598 87.4	25
60,785,875 14.1	45,950,447 13.6	24,536,591 8.1	14,636,849 7.9	189,009,131 14.0	133,701,824 13.1	325,951,878 13.1	235,244,274 12.6	26
128,168,801 97,790,212 70.3	95,164,913 74,331,469 78.1	66,552,681 54,002,694 81.1	38,824,655 31,585,959 81.4	470,449,176 330,641,643 72.2	334,726,094 255,962,661 76.5	774,360,025 574,013,237 74.1	553,005,684 424,235,408 76.7	27
30,378,589 23.7	20,833,444 21.9	12,549,087 18.9	7,238,696 18.6	130,807,533 27.8	78,763,433 23.5	200,355,788 25.9	128,770,276 23.3	28
367,960,890 234,425,890 63.7	296,875,548 200,356,437 67.5	167,267,247 110,160,992 65.9	111,473,872 78,815,727 70.7	1,142,942,707 715,302,831 62.6	958,301,272 651,876,515 68.0	1,955,551,332 1,237,875,121 63.3	1,649,882,380 1,119,277,062 67.8	29
133,535,000 36.3	96,519,111 32.5	57,106,255 34.1	32,658,145 29.3	427,639,826 37.4	306,424,757 32.0	717,670,211 36.7	530,605,318 32.2	30
175,460,785	130,864,732	91,770,695	54,552,805	550,101,771	395,686,250	974,028,415	711,800,355	31
80,581,037 45.9	64,890,572 49.6	49,951,833 54.4	33,820,743 62.0	233,197,222 42.4	188,492,760 47.6	434,652,790 44.6	345,276,766 48.5	32
94,879,148 54.1	65,965,160 50.4	41,818,802 45.6	20,723,062 38.0	316,904,549 57.6	207,193,490 52.4	539,375,625 55.4	366,523,589 51.5	33
97,056,017	76,808,083	49,990,908	34,059,989	320,708,198	258,142,682	550,792,632	444,474,584	34
58,493,309 60.3	49,904,762 65.0	34,676,284 69.4	26,041,817 76.5	170,218,259 53.1	146,041,510 56.6	314,076,540 57.2	266,694,821 60.3	35
38,563,608 39.7	26,903,321 35.0	15,314,624 30.6	8,018,172 23.5	150,489,939 46.9	112,101,172 43.4	235,816,092 42.8	177,779,763 40.0	36
8,158,203 6,530,620 80.0	8,457,003 6,697,403 79.2	2,691,218 1,909,781 71.0	1,919,809 1,439,268 75.0	24,883,806 18,173,670 73.0	24,725,317 17,875,835 72.3	41,160,276 30,390,039 74.0	41,321,001 30,586,810 74.0	37
1,627,574 20.0	1,759,600 20.8	781,437 20.0	480,541 25.0	6,710,736 27.0	6,849,482 27.7	10,770,237 26.2	10,734,251 26.0	38

## MANUFACTURES.

TABLE CCXLII.—COMPARATIVE SUMMARY—MANUFACTURES IN URBAN AND RURAL

		NUMBER OF ESTABLISHMENTS.		CAPITAL.		WAGE-EARNERS AND WAGES.	
		1905	1900	1905	1900	Average number.	
						1905	1900
	South Atlantic division—Continued.						
	Northern South Atlantic—Continued.						
81	Maryland.....	3,852	3,886	\$201,877,966	\$140,155,313	94,174	94,170
82	Urban.....	2,380	2,480	156,743,849	111,842,982	70,855	70,745
83	Per cent of total.....	61.8	63.8	77.0	75.0	75.2	75.1
84	Rural.....	1,472	1,406	45,134,117	37,312,381	23,319	23,425
85	Per cent of total.....	38.2	36.2	22.4	25.0	24.8	24.9
86	District of Columbia.....	482	491	20,190,783	17,960,498	6,299	6,155
87	Urban.....	482	491	20,190,783	17,960,498	6,299	6,155
88	Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0
89	Virginia.....	3,187	3,186	147,980,182	92,290,589	80,285	66,223
90	Urban.....	745	752	80,192,704	50,194,429	38,206	33,427
91	Per cent of total.....	23.4	23.6	54.2	54.4	47.6	50.5
92	Rural.....	2,442	2,434	67,786,478	42,105,160	42,079	32,796
93	Per cent of total.....	76.6	76.4	45.8	45.6	52.4	49.5
94	West Virginia.....	2,109	1,824	86,820,823	40,103,138	43,758	33,080
95	Urban.....	303	327	20,979,843	17,884,202	12,125	9,830
96	Per cent of total.....	17.2	17.9	31.1	36.4	27.7	29.7
97	Rural.....	1,746	1,497	59,840,980	31,218,876	31,633	23,250
98	Per cent of total.....	82.8	82.1	68.9	63.6	72.3	70.3
99	Southern South Atlantic.....	9,303	9,124	422,606,390	230,018,519	279,020	238,154
100	Urban.....	1,596	1,244	102,714,796	70,421,185	61,719	40,235
101	Per cent of total.....	17.2	13.6	24.3	29.8	22.1	20.7
102	Rural.....	7,707	7,880	319,891,600	165,597,334	217,901	188,919
103	Per cent of total.....	82.8	86.4	75.7	70.2	77.9	79.3
104	North Carolina.....	3,272	3,466	141,000,639	68,283,005	85,339	72,322
105	Urban.....	348	286	21,133,385	13,150,942	12,051	10,400
106	Per cent of total.....	10.6	8.3	15.0	19.3	14.1	14.5
107	Rural.....	2,924	3,179	119,867,254	55,132,063	73,288	61,922
108	Per cent of total.....	89.4	91.7	85.0	80.7	85.9	85.5
109	South Carolina.....	1,369	1,369	113,422,224	62,750,027	59,441	47,625
110	Urban.....	220	195	15,480,039	12,692,105	8,097	7,409
111	Per cent of total.....	15.7	14.2	13.6	20.2	14.6	15.8
112	Rural.....	1,179	1,174	97,942,185	50,057,922	50,744	39,616
113	Per cent of total.....	84.3	85.8	86.4	79.8	85.4	84.2
114	Georgia.....	3,219	3,015	135,211,551	79,303,316	92,749	83,336
115	Urban.....	650	534	51,588,508	36,004,003	28,818	23,822
116	Per cent of total.....	20.2	17.7	38.2	45.4	31.1	28.6
117	Rural.....	2,569	2,481	83,623,043	43,299,313	63,931	59,514
118	Per cent of total.....	79.8	82.3	61.8	54.6	68.9	71.4
119	Florida.....	1,413	1,275	32,071,982	25,082,171	42,091	35,471
120	Urban.....	378	229	14,509,804	8,574,135	12,153	7,544
121	Per cent of total.....	26.8	18.0	44.0	33.4	28.9	21.3
122	Rural.....	1,035	1,046	18,462,118	17,108,036	29,938	27,927
123	Per cent of total.....	73.2	82.0	56.0	66.6	71.1	78.7
124	North Central division.....	73,246	71,253	3,753,349,949	2,633,569,569	1,536,889	1,330,373
125	Urban.....	36,132	33,830	2,789,920,292	1,992,614,090	1,110,501	961,993
126	Per cent of total.....	49.3	47.5	74.3	75.7	72.3	71.8
127	Rural.....	37,114	37,414	963,429,657	640,954,879	426,388	377,470
128	Per cent of total.....	50.7	52.5	25.7	24.3	27.7	28.2
129	Eastern North Central.....	51,754	50,521	2,895,446,016	2,056,116,914	1,224,528	1,073,322
130	Urban.....	27,595	25,709	2,147,746,359	1,563,991,541	889,341	773,862
131	Per cent of total.....	53.3	50.9	74.2	76.1	72.6	72.1
132	Rural.....	24,159	24,812	747,699,657	492,125,373	335,187	299,460
133	Per cent of total.....	46.7	49.1	25.8	23.9	27.4	27.9
134	Ohio.....	13,785	13,868	856,988,830	570,908,968	364,298	308,109
135	Urban.....	7,744	7,347	647,365,284	439,040,127	269,088	229,526
136	Per cent of total.....	56.2	53.0	75.5	76.9	73.9	74.5
137	Rural.....	6,041	6,521	209,623,546	131,868,841	95,210	78,583
138	Per cent of total.....	43.8	47.0	24.5	23.1	26.1	25.5
139	Indiana.....	7,044	7,128	312,071,234	219,321,080	154,174	139,017
140	Urban.....	2,800	2,504	186,698,784	134,302,053	95,893	83,134
141	Per cent of total.....	39.8	35.1	59.8	61.2	62.2	59.8
142	Rural.....	4,244	4,624	125,372,450	85,019,027	58,281	55,883
143	Per cent of total.....	60.2	64.9	40.2	38.8	37.8	40.2
144	Illinois.....	14,921	14,374	975,844,799	732,829,771	379,436	332,371
145	Urban.....	10,536	9,902	822,916,347	644,579,342	319,486	285,863
146	Per cent of total.....	70.6	68.9	84.3	88.0	84.2	85.9
147	Rural.....	4,385	4,472	152,928,452	88,250,429	59,950	47,008
148	Per cent of total.....	29.4	31.1	15.7	12.0	15.8	14.1
149	Michigan.....	7,446	7,310	337,894,102	246,996,529	175,220	155,800
150	Urban.....	3,412	3,133	203,581,101	150,694,950	111,290	89,043
151	Per cent of total.....	45.8	42.9	60.2	61.0	63.5	57.5
152	Rural.....	4,034	4,177	134,313,001	96,301,573	63,930	66,757
153	Per cent of total.....	54.2	57.1	39.8	39.0	36.5	42.5
154	Wisconsin.....	8,558	7,841	412,647,051	286,060,566	151,391	137,525
155	Urban.....	3,103	2,823	287,184,843	195,375,063	93,584	85,606
156	Per cent of total.....	36.3	36.0	69.6	68.3	61.8	62.3
157	Rural.....	5,455	5,018	125,462,208	90,685,503	57,807	51,919
158	Per cent of total.....	63.7	64.0	30.4	31.7	38.2	37.7

## URBAN MANUFACTURES.

CCXCV

DISTRICTS, BY GEOGRAPHIC DIVISIONS, STATES, AND TERRITORIES: 1905 AND 1900—Continued.

WAGE-EARNERS AND WAGES—continued.		MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS.		
Wages.								
1905	1900	1905	1900	1905	1900	1905	1900	
\$36,144,244	\$32,414,429	\$21,904,762	\$14,784,769	\$150,024,066	\$129,354,412	\$243,375,996	\$211,076,143	81
27,759,070	24,799,598	18,844,743	12,445,676	86,659,937	78,986,177	161,325,780	141,425,073	82
76.8	76.5	86.0	84.2	57.8	61.1	66.3	67.0	83
8,384,574	7,614,831	3,000,009	2,339,093	63,804,129	50,368,235	82,050,236	69,661,070	84
23.2	23.5	14.0	15.8	42.2	38.9	33.7	33.0	85
3,658,370	3,022,906	2,724,840	1,941,118	7,731,971	7,475,216	18,359,159	16,426,408	86
3,658,370	3,022,906	2,724,840	1,941,118	7,731,971	7,475,216	18,359,159	16,426,408	87
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	88
27,043,058	20,273,889	14,403,382	11,249,903	83,649,149	59,359,484	148,856,525	108,644,150	89
14,447,534	11,129,769	8,275,711	8,066,119	37,387,806	28,255,752	70,690,741	55,177,217	90
61.7	54.9	57.5	71.0	44.7	47.6	47.5	50.8	91
13,495,524	9,144,120	6,127,671	3,193,784	46,261,283	31,103,732	78,165,784	53,466,933	92
48.3	45.1	42.5	28.4	55.3	52.4	52.5	49.2	93
21,153,042	12,639,856	8,266,716	4,164,390	54,419,206	37,228,253	99,040,676	67,006,822	94
6,097,106	4,265,080	2,921,209	2,159,680	20,265,415	13,448,530	34,210,841	23,079,313	95
28.8	33.7	35.3	51.9	37.2	36.1	34.5	34.4	96
15,055,936	8,384,770	5,345,507	2,004,754	34,153,791	23,779,723	64,829,835	43,927,509	97
71.2	66.3	64.7	48.1	62.8	63.9	65.5	65.6	98
78,403,808	54,056,649	41,779,787	20,492,816	229,393,573	137,543,568	423,235,783	267,325,771	99
22,088,328	14,994,810	15,275,549	7,787,926	62,978,063	42,451,250	119,076,250	78,581,945	100
28.2	27.7	36.6	38.0	27.5	30.9	28.3	29.4	101
56,315,540	39,061,839	26,504,238	12,704,890	166,414,610	95,062,318	303,559,533	188,743,826	102
71.8	72.3	63.4	62.0	72.5	69.1	71.7	70.6	103
21,375,294	14,051,784	17,952,050	9,632,714	79,208,004	44,854,224	142,520,776	85,274,083	104
3,381,360	2,353,672	5,987,753	2,989,169	11,989,008	8,249,834	25,635,638	16,106,425	105
15.8	16.7	33.4	31.0	15.1	18.4	17.0	18.9	106
17,993,028	11,698,112	11,904,297	6,043,546	67,278,996	36,604,390	116,985,138	69,167,658	107
84.2	83.3	66.6	69.0	84.9	81.6	82.1	81.1	108
13,868,950	9,130,269	6,013,241	3,131,202	49,968,626	30,485,861	79,376,262	53,335,811	109
2,450,973	1,853,189	1,415,509	680,144	9,034,620	6,979,029	14,488,514	11,404,995	110
17.7	20.3	23.5	21.9	18.1	22.9	18.3	21.4	111
11,411,977	7,277,080	4,597,732	2,445,058	40,934,006	23,506,832	64,887,748	41,930,816	112
82.3	79.7	76.5	78.1	81.9	77.1	81.7	78.6	113
27,392,442	19,958,153	12,206,634	5,550,959	83,624,504	49,356,296	151,040,455	94,532,368	114
9,797,505	7,069,207	5,119,445	2,804,975	31,988,547	21,317,871	56,856,936	38,047,578	115
35.8	35.4	41.9	50.5	38.3	43.2	37.6	40.2	116
17,504,937	12,888,946	7,087,189	2,745,984	51,035,957	28,038,425	94,183,510	56,484,790	117
64.2	64.6	58.1	49.5	61.7	62.4	62.4	59.8	118
15,767,182	10,916,443	5,607,862	2,177,941	16,532,439	12,847,187	50,298,290	34,183,509	119
6,452,484	3,718,742	2,762,842	1,307,638	9,966,788	5,904,516	22,795,162	13,022,947	120
40.9	34.1	49.1	60.0	46.0	45.3	45.3	38.1	121
9,314,098	7,197,701	2,855,020	870,303	6,565,651	6,942,671	27,503,128	21,160,562	122
59.1	65.9	50.9	40.0	39.7	54.0	54.7	61.9	123
773,480,165	590,248,727	518,132,418	333,002,522	2,907,547,583	2,265,141,276	4,880,813,934	3,826,024,192	124
509,618,715	432,605,715	418,656,288	278,650,029	2,124,124,278	1,691,221,633	3,625,636,084	2,852,192,503	125
73.6	73.3	80.8	83.5	73.1	73.7	74.1	74.5	126
203,867,450	157,583,012	99,476,130	54,952,493	783,423,305	603,019,643	1,264,177,850	973,831,689	127
26.4	26.7	19.2	16.5	26.9	26.3	25.9	25.5	128
615,043,034	473,039,517	413,259,173	269,463,083	2,045,530,931	1,647,576,710	3,605,368,132	2,853,055,527	129
466,000,555	348,413,335	335,592,757	224,644,296	1,533,080,780	1,238,329,995	2,724,620,857	2,157,659,312	130
74.2	73.7	73.2	83.4	74.9	75.2	75.6	75.6	131
158,944,079	124,626,182	77,666,416	44,818,787	512,450,151	409,246,715	880,747,275	695,396,215	132
25.8	26.3	18.8	16.6	25.1	24.8	24.4	24.4	133
182,420,425	130,427,579	102,704,746	63,694,201	527,636,585	409,302,501	960,811,857	748,670,855	134
137,000,574	102,272,574	81,641,784	53,500,847	398,336,205	298,282,142	730,200,214	561,113,610	135
75.1	75.0	79.5	84.1	75.5	72.9	76.0	74.9	136
45,428,851	34,155,005	21,002,962	10,103,354	120,300,380	111,020,359	230,611,643	187,557,245	137
24.9	25.0	20.5	15.9	24.5	27.1	24.0	25.1	138
72,058,099	50,280,131	46,682,513	30,807,171	220,507,007	195,162,566	303,954,405	337,071,630	139
45,704,650	35,926,711	30,286,396	20,055,785	132,653,330	124,341,281	244,612,093	216,076,625	140
63.4	60.6	77.7	84.6	60.2	63.7	62.1	64.1	141
26,353,449	23,353,420	10,396,117	4,751,386	87,853,677	70,821,285	149,342,312	120,905,005	142
36.6	39.4	22.3	15.4	39.8	37.3	35.9	35.9	143
208,405,468	150,104,179	172,185,567	118,047,771	840,057,316	681,450,122	1,410,342,129	1,120,868,308	144
178,374,801	138,984,037	161,105,549	103,443,355	729,117,952	607,230,318	1,222,970,456	990,707,594	145
85.6	87.4	87.6	87.6	86.8	89.1	86.7	88.4	146
30,030,907	20,120,142	21,080,018	14,604,416	110,939,364	74,219,804	187,371,673	130,160,714	147
14.4	12.6	12.2	12.4	10.9	11.0	13.3	11.6	148
81,278,837	62,531,812	40,012,191	25,042,514	230,080,931	175,960,128	429,120,060	319,601,856	149
51,802,342	30,431,481	31,909,478	17,997,422	130,166,577	97,738,152	267,418,050	186,801,339	150
63.8	58.3	69.4	71.9	59.2	55.5	62.3	58.4	151
29,416,495	26,100,331	14,102,713	7,045,092	93,914,354	78,227,976	161,702,017	132,890,517	152
36.2	41.7	30.6	28.1	40.8	44.5	37.0	41.6	153
71,471,805	55,695,816	45,674,156	31,871,426	227,255,092	185,695,393	411,139,681	326,752,878	154
43,757,128	34,798,532	34,649,550	23,556,887	136,512,716	110,738,102	259,420,044	202,960,144	155
61.2	62.5	75.9	73.9	60.2	59.6	63.1	62.1	156
27,714,677	20,897,284	11,024,606	8,314,539	90,442,376	74,957,291	151,719,637	123,792,734	157
38.8	37.5	24.1	26.1	39.8	40.4	36.9	37.9	158

## MANUFACTURES.

TABLE CCXLII.—COMPARATIVE SUMMARY—MANUFACTURES IN URBAN AND RURAL

		NUMBER OF ESTABLISHMENTS.		CAPITAL.		WAGE-EARNERS AND WAGES.	
		1905	1900	1905	1900	Average number.	
						1905	1900
159	North Central division—Continued.	21,492	20,732	\$857,903,933	\$577,452,655	312,361	266,051
	Western North Central.....						
160	Urban.....	8,537	8,130	642,173,933	428,623,140	221,160	188,041
161	Per cent of total.....	39.7	39.2	74.9	74.2	70.8	70.7
162	Rural.....	12,955	12,602	215,730,000	148,829,500	91,201	78,010
163	Per cent of total.....	60.3	60.8	25.1	25.8	29.1	29.3
164	Minnesota.....	4,756	4,096	184,903,271	133,076,000	69,036	64,567
165	Urban.....	1,870	1,633	124,777,794	90,973,300	44,301	40,118
166	Per cent of total.....	39.3	39.9	67.5	68.4	63.7	62.1
167	Rural.....	2,886	2,463	60,125,477	42,103,300	25,245	24,436
168	Per cent of total.....	60.7	60.1	32.5	31.6	36.3	37.9
169	Iowa.....	4,785	4,328	111,427,429	85,667,334	49,481	44,420
170	Urban.....	1,663	1,524	82,152,708	63,564,401	35,945	31,456
171	Per cent of total.....	34.8	31.6	73.7	74.2	72.6	70.8
172	Rural.....	3,122	3,304	29,274,721	22,102,843	13,536	12,964
173	Per cent of total.....	65.2	68.4	26.3	25.8	27.4	29.2
174	Missouri.....	6,464	6,853	379,368,827	223,781,088	133,167	107,704
175	Urban.....	3,000	3,786	324,670,703	190,540,745	106,078	85,657
176	Per cent of total.....	57.1	55.2	85.6	79.7	79.7	79.5
177	Rural.....	2,774	3,067	54,698,034	33,240,343	27,089	22,047
178	Per cent of total.....	42.9	44.8	14.4	20.3	20.3	20.5
179	North Dakota.....	507	337	5,703,837	3,511,908	1,755	1,358
180	Urban.....	47	26	884,188	845,668	386	307
181	Per cent of total.....	9.3	10.7	15.5	24.1	22.0	22.6
182	Rural.....	460	301	4,819,649	2,666,300	1,369	1,051
183	Per cent of total.....	90.7	89.3	84.5	75.9	78.0	77.4
184	South Dakota.....	686	624	7,585,142	6,051,288	2,402	2,224
185	Urban.....	61	48	1,748,022	927,128	465	311
186	Per cent of total.....	8.9	7.7	23.0	15.3	18.7	14.0
187	Rural.....	625	576	5,837,120	5,124,160	2,027	1,913
188	Per cent of total.....	91.1	92.3	77.0	84.7	81.3	86.0
189	Nebraska.....	1,819	1,695	80,235,310	65,906,052	20,200	18,660
190	Urban.....	487	429	59,543,162	51,587,092	13,101	12,707
191	Per cent of total.....	26.8	25.3	74.2	78.3	64.7	68.1
192	Rural.....	1,332	1,266	20,692,148	14,318,960	7,159	5,952
193	Per cent of total.....	73.2	74.7	25.8	21.7	35.3	31.9
194	Kansas.....	2,475	2,299	88,680,117	59,458,256	35,570	27,119
195	Urban.....	719	674	48,397,206	30,183,765	20,794	17,485
196	Per cent of total.....	29.1	29.3	54.6	50.8	58.5	64.5
197	Rural.....	1,756	1,625	40,282,851	29,274,491	14,776	9,634
198	Per cent of total.....	70.9	70.7	45.4	49.2	41.5	35.5
199	South Central division.....	18,500	17,232	734,267,130	427,983,941	364,699	290,596
200	Urban.....	5,277	4,741	302,655,173	193,916,102	129,991	107,130
201	Per cent of total.....	28.4	27.5	41.2	45.3	35.6	36.9
202	Rural.....	13,313	12,491	431,611,956	234,067,839	234,708	183,466
203	Per cent of total.....	71.6	72.5	58.8	54.7	64.4	63.1
204	Eastern South Central.....	10,311	10,058	405,361,127	234,014,569	221,220	177,208
205	Urban.....	2,962	2,730	180,618,500	110,338,548	84,414	69,214
206	Per cent of total.....	28.7	27.1	44.6	47.2	38.2	39.1
207	Rural.....	7,349	7,328	224,742,627	123,676,021	136,815	107,994
208	Per cent of total.....	71.3	72.9	55.4	52.8	61.8	60.9
209	Kentucky.....	3,734	3,648	147,282,478	87,095,822	59,794	51,735
210	Urban.....	1,475	1,498	102,703,314	58,650,380	37,378	33,126
211	Per cent of total.....	39.5	41.3	69.7	66.7	62.5	64.0
212	Rural.....	2,259	2,150	44,579,164	29,345,442	22,416	18,609
213	Per cent of total.....	60.5	58.7	30.3	33.3	37.5	36.0
214	Tennessee.....	3,175	3,110	102,430,481	63,140,657	60,572	45,963
215	Urban.....	964	787	55,134,890	36,134,741	32,297	23,740
216	Per cent of total.....	30.4	25.3	53.8	57.2	53.3	51.7
217	Rural.....	2,211	2,323	47,304,591	27,005,916	28,275	22,223
218	Per cent of total.....	69.6	74.7	46.2	42.8	46.7	48.3
219	Alabama.....	1,882	2,000	105,382,850	60,165,904	62,173	52,711
220	Urban.....	414	363	18,376,753	11,703,009	12,046	9,879
221	Per cent of total.....	22.0	18.2	17.4	19.6	19.4	18.7
222	Rural.....	1,468	1,637	87,006,106	48,462,895	50,127	42,832
223	Per cent of total.....	78.0	81.8	82.6	80.4	80.6	81.3
224	Mississippi.....	1,520	1,294	50,256,309	22,712,136	38,690	26,799
225	Urban.....	109	82	4,403,543	3,700,418	2,693	2,469
226	Per cent of total.....	7.2	6.3	8.8	16.7	7.0	9.2
227	Rural.....	1,411	1,212	45,852,766	18,921,708	35,997	24,330
228	Per cent of total.....	92.8	93.7	91.2	83.3	93.0	90.8
229	Western South Central.....	8,279	7,174	328,906,012	193,969,372	143,470	113,388
230	Urban.....	2,315	2,011	122,036,673	83,577,554	45,577	37,916
231	Per cent of total.....	28.0	28.0	37.1	43.1	31.8	33.4
232	Rural.....	5,964	5,163	206,869,339	110,391,818	97,893	75,472
233	Per cent of total.....	72.0	72.0	62.9	56.9	68.2	66.6
234	Louisiana.....	2,091	1,826	150,810,608	100,874,729	55,859	40,878
235	Urban.....	793	747	62,534,027	44,834,564	19,476	17,250
236	Per cent of total.....	37.9	40.9	41.5	44.4	34.9	42.3
237	Rural.....	1,298	1,079	88,276,581	56,040,165	36,383	23,628
238	Per cent of total.....	62.1	59.1	58.5	55.6	65.1	57.7

# URBAN MANUFACTURES.

ccxcvii

DISTRICTS, BY GEOGRAPHIC DIVISIONS, STATES, AND TERRITORIES: 1905 AND 1900—Continued.

WAGE-EARNERS AND WAGES—continued.		MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS.		
Wages.								
1905	1900	1905	1900	1905	1900	1905	1900	
\$157,842,531	\$117,209,210	\$104,873,245	\$64,139,439	\$802,010,652	\$647,564,566	\$1,284,445,802	\$972,968,665	150
112,019,160	84,252,380	83,063,531	54,005,733	501,037,498	452,801,638	901,015,227	604,533,191	160
71.5	71.9	70.2	84.2	68.6	63.9	70.1	71.4	161
44,023,371	32,056,830	21,809,714	10,133,706	270,973,154	194,672,928	383,430,575	278,435,474	162
28.5	28.1	20.8	15.8	81.4	30.1	20.9	28.6	163
35,843,145	20,020,190	24,403,840	12,742,948	210,553,949	150,209,277	307,858,073	223,062,922	164
22,801,380	18,114,300	16,315,762	8,712,584	123,770,896	95,963,701	186,101,775	143,537,216	165
63.8	62.4	66.6	68.4	58.8	63.8	60.5	64.2	166
12,081,705	10,914,890	8,178,078	4,030,304	86,774,053	54,335,576	121,756,298	80,155,706	167
36.2	37.6	33.4	31.6	41.2	36.2	39.5	35.8	168
22,007,053	18,020,653	12,152,888	6,026,455	102,843,892	85,778,867	160,572,313	132,870,865	169
16,945,327	12,837,770	9,305,492	5,035,794	74,540,539	59,197,715	116,033,279	92,341,828	170
73.7	71.2	70.6	76.0	72.5	69.0	72.3	69.5	171
6,051,726	5,182,883	2,847,306	1,590,061	28,303,353	26,581,152	44,539,034	40,529,037	172
26.3	28.8	23.4	24.0	27.5	31.0	27.7	30.5	173
66,044,126	46,713,734	40,522,457	33,641,428	252,258,417	184,189,030	439,548,957	316,304,095	174
54,687,230	38,515,805	43,705,760	31,340,178	170,737,322	130,393,149	335,431,279	243,492,639	175
81.9	83.4	88.4	93.2	70.1	70.8	77.0	77.0	176
12,050,896	8,197,029	5,726,607	2,301,250	75,521,095	53,705,881	104,116,979	72,811,456	177
18.1	17.5	11.6	6.8	20.9	29.2	23.7	23.0	178
1,031,307	671,321	509,880	202,723	7,095,986	4,150,860	10,217,914	6,259,540	179
218,548	163,078	114,986	49,033	555,020	783,246	1,160,832	1,230,658	180
21.2	24.3	22.5	24.2	7.8	18.9	11.4	19.7	181
812,759	508,243	394,914	153,090	6,540,966	3,367,614	9,057,082	5,020,182	182
78.8	75.7	77.5	75.8	92.2	81.1	88.6	80.3	183
1,421,680	1,120,787	833,360	366,225	8,096,831	6,483,677	13,085,333	9,520,946	184
248,200	151,574	239,786	127,803	1,065,933	321,528	1,897,790	883,624	185
17.5	13.4	28.8	34.9	12.3	5.0	14.5	9.3	186
1,173,480	978,213	593,574	238,332	7,631,138	6,102,149	11,187,543	8,046,322	187
82.5	80.6	71.2	66.1	87.7	95.0	85.5	90.7	188
11,022,149	8,842,420	8,400,360	6,108,761	124,051,628	95,925,178	154,918,220	130,302,453	189
7,267,450	6,198,045	7,080,049	5,308,046	104,777,406	82,541,779	126,641,501	110,346,627	190
65.9	70.1	83.4	87.0	84.5	86.0	81.7	84.7	191
3,754,699	2,643,784	1,410,311	800,115	19,274,222	13,383,399	28,276,719	19,955,826	192
34.1	29.9	16.6	13.0	15.5	14.0	18.3	15.3	193
18,883,071	12,802,096	8,870,460	4,390,800	156,509,949	120,737,677	198,244,992	154,008,544	194
10,791,025	8,271,208	6,211,716	3,371,005	109,681,622	83,090,520	133,748,072	102,700,599	195
57.1	64.6	70.0	70.8	70.0	69.3	67.5	66.7	196
8,092,046	4,530,888	2,658,744	1,019,294	46,928,327	37,047,157	64,406,920	51,307,945	197
42.9	35.4	30.0	23.2	30.0	30.7	32.5	33.3	198
151,069,526	98,718,387	82,908,012	46,376,536	468,988,696	330,017,235	879,567,293	577,400,101	199
57,329,008	42,072,194	38,853,824	27,066,380	225,689,091	154,004,211	382,060,004	268,150,675	200
37.9	42.6	45.9	58.4	43.4	46.7	46.4	46.4	201
93,740,518	56,646,193	44,054,188	19,310,147	273,319,005	176,013,024	497,507,289	309,249,426	202
62.1	57.4	53.1	41.6	53.8	53.3	56.6	53.0	203
83,941,797	56,003,048	46,525,537	30,181,286	252,156,463	176,506,503	464,335,811	325,086,235	204
34,047,846	25,442,327	24,850,035	19,140,499	117,298,674	84,476,421	214,332,762	158,151,106	205
41.6	45.4	53.4	63.4	46.5	47.9	46.2	48.0	206
48,093,951	30,560,721	21,675,502	11,040,787	134,857,789	92,030,082	250,003,049	166,635,120	207
58.4	54.6	46.6	36.6	53.5	52.1	53.8	51.4	208
24,438,684	18,454,252	20,530,852	18,115,195	86,545,464	67,406,202	159,753,968	126,508,660	209
15,941,109	12,346,286	15,084,304	14,269,572	58,892,650	44,122,236	109,910,543	85,235,254	210
65.2	66.9	76.4	78.8	68.0	65.5	68.8	67.4	211
8,407,575	6,107,066	4,840,548	3,845,018	27,652,814	23,283,966	49,843,425	41,273,406	212
34.8	33.1	28.6	21.2	32.0	34.5	31.2	32.6	213
22,805,628	14,727,506	12,090,039	6,022,026	79,351,746	54,559,039	137,960,476	92,749,129	214
13,143,739	8,621,661	7,151,260	3,414,497	43,189,377	28,402,722	76,611,034	49,505,056	215
57.6	57.9	50.1	56.7	54.4	52.2	55.5	53.4	216
9,661,880	6,205,845	4,938,839	2,608,129	36,162,369	26,066,317	61,349,442	43,244,073	217
42.4	42.1	40.9	43.3	45.6	47.8	44.5	46.6	218
21,878,451	14,011,683	8,048,819	4,128,294	60,458,368	37,098,233	109,169,922	72,109,029	219
4,616,357	3,651,798	1,669,163	1,113,988	11,668,732	9,449,903	21,835,932	19,003,683	220
21.1	24.5	20.7	27.0	19.3	24.9	20.0	26.4	221
17,261,494	11,259,885	6,370,656	3,014,306	48,789,636	28,548,270	87,333,990	53,106,246	222
78.9	75.5	79.3	78.0	80.7	75.1	80.0	73.6	223
14,819,034	7,909,607	5,855,767	1,915,171	25,800,885	16,543,029	57,451,445	33,718,517	224
1,246,041	922,582	345,308	342,487	3,547,915	2,411,500	5,975,263	4,407,113	225
8.4	11.7	5.9	17.9	13.8	14.6	10.4	13.1	226
13,572,993	6,987,025	5,510,459	1,572,734	22,252,970	14,131,529	51,476,192	29,311,404	227
91.6	88.3	94.1	82.1	86.2	85.4	89.6	86.9	228
67,127,729	42,715,339	36,382,475	16,195,250	246,832,233	153,510,732	415,231,482	262,313,866	229
22,381,162	16,629,867	14,003,789	7,925,890	108,370,417	69,527,790	167,727,242	100,999,569	230
33.3	38.9	38.5	48.9	45.3	40.4	43.6	43.6	231
44,746,567	26,085,472	22,378,086	8,269,360	138,461,816	83,982,942	247,504,240	142,314,297	232
66.7	61.1	51.1	51.1	51.1	54.7	59.6	56.4	233
25,315,750	14,725,437	16,047,105	8,101,311	117,035,305	75,403,937	186,379,592	111,397,910	234
8,445,052	6,606,747	6,557,458	4,476,418	63,814,449	41,673,064	88,908,990	59,719,597	235
33.4	40.9	40.9	55.3	55.3	47.7	53.6	53.6	236
16,870,698	8,118,690	9,489,647	3,624,893	53,220,856	33,730,873	97,470,602	51,678,322	237
66.6	55.1	59.1	44.7	45.5	44.7	52.3	46.4	238

TABLE CCXLII.—COMPARATIVE SUMMARY—MANUFACTURES IN URBAN AND RURAL

	NUMBER OF ESTABLISHMENTS.		CAPITAL.		WAGE-EARNERS AND WAGES.	
	1905	1900	1905	1900	Average number.	
					1905	1900
South Central division—Continued.						
Western South Central—Continued.						
Arkansas.....	1,907	1,746	\$46,306,116	\$25,384,636	33,089	31,525
Urban.....	224	180	9,598,492	5,617,756	5,206	3,158
Per cent of total.....	11.7	10.7	20.7	22.1	16.0	10.0
Rural.....	1,683	1,566	36,707,624	19,766,880	27,783	28,367
Per cent of total.....	88.3	89.3	79.3	77.9	84.0	90.0
Indian Territory.....	466	179	5,016,654	1,591,953	2,257	1,087
Rural.....	466	179	5,016,654	1,591,953	2,257	1,087
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0
Oklahoma.....	657	316	11,107,763	2,402,438	3,199	1,294
Urban.....	123	60	4,716,751	848,644	1,063	401
Per cent of total.....	18.7	21.8	42.5	34.8	32.9	35.6
Rural.....	534	247	6,391,012	1,618,794	2,146	893
Per cent of total.....	81.3	78.2	57.5	65.7	67.1	64.4
Texas.....	3,158	3,107	115,664,871	63,655,616	49,066	38,604
Urban.....	1,175	1,009	45,187,403	32,281,590	19,752	17,047
Per cent of total.....	37.2	32.5	39.1	50.7	40.3	44.2
Rural.....	1,983	2,098	70,477,468	31,374,026	29,314	21,557
Per cent of total.....	62.8	67.5	60.9	49.3	59.7	55.8
Western division.....	14,802	11,475	644,191,024	372,125,952	216,867	167,703
Urban.....	6,842	5,241	307,290,279	202,573,203	107,842	84,343
Per cent of total.....	46.2	45.7	47.7	54.4	49.7	50.3
Rural.....	7,960	6,234	336,901,645	169,552,749	109,025	83,360
Per cent of total.....	53.8	54.3	52.3	45.6	50.3	49.7
Rocky Mountain.....	2,720	2,318	177,276,892	102,736,493	39,143	35,454
Urban.....	1,074	911	67,295,421	61,503,325	16,671	16,565
Per cent of total.....	39.5	39.3	38.0	59.9	42.6	46.7
Rural.....	1,646	1,407	109,981,471	41,233,168	22,472	18,889
Per cent of total.....	60.5	60.7	62.0	40.1	57.4	53.3
Montana.....	382	395	52,689,810	38,224,915	8,957	9,854
Urban.....	137	136	31,350,371	23,502,935	3,985	4,674
Per cent of total.....	35.9	34.4	59.6	61.5	44.5	47.4
Rural.....	245	259	21,233,439	14,721,980	4,972	5,180
Per cent of total.....	64.1	65.6	40.4	38.5	55.5	52.6
Idaho.....	364	287	9,689,445	2,130,112	3,061	1,552
Rural.....	364	287	9,689,445	2,130,112	3,061	1,552
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0
Wyoming.....	169	139	2,695,889	2,047,883	1,834	2,060
Urban.....	32	29	988,615	871,531	751	798
Per cent of total.....	18.9	20.9	36.7	42.6	40.9	38.7
Rural.....	137	110	1,707,274	1,176,352	1,083	1,262
Per cent of total.....	81.1	79.1	63.3	57.4	59.1	61.3
Colorado.....	1,606	1,323	107,663,500	58,172,865	21,813	19,498
Urban.....	905	746	34,950,435	37,128,859	11,935	11,093
Per cent of total.....	56.4	56.4	32.5	63.8	54.7	56.9
Rural.....	701	577	72,713,065	21,044,006	9,878	8,405
Per cent of total.....	43.6	43.6	67.5	36.2	45.3	43.1
New Mexico.....	199	174	4,638,248	2,160,718	3,478	2,490
Rural.....	199	174	4,638,248	2,160,718	3,478	2,490
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0
Basin and Plateau.....	800	828	43,201,662	23,987,820	13,647	9,043
Urban.....	256	205	7,700,750	4,212,972	3,859	2,832
Per cent of total.....	28.8	24.8	17.8	17.6	28.3	31.3
Rural.....	544	623	35,500,912	19,774,848	9,788	6,211
Per cent of total.....	71.2	75.2	82.2	82.4	71.7	68.7
Arizona.....	169	154	14,395,654	9,517,573	4,793	3,126
Rural.....	169	154	14,395,654	9,517,573	4,793	3,126
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0
Utah.....	606	575	20,004,011	13,219,039	8,052	5,413
Urban.....	256	205	7,700,750	4,212,972	3,859	2,832
Per cent of total.....	42.2	35.7	38.0	31.0	47.0	52.3
Rural.....	350	370	18,303,261	9,006,067	4,193	2,581
Per cent of total.....	57.8	64.3	70.4	68.1	52.1	47.7
Nevada.....	115	99	2,891,997	1,251,208	802	504
Rural.....	115	99	2,891,997	1,251,208	802	504
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0
Pacific.....	11,192	8,329	423,623,370	245,401,639	164,077	123,206
Urban.....	5,512	4,125	232,294,108	136,850,906	87,312	64,046
Per cent of total.....	49.2	49.5	54.8	55.8	52.7	52.7
Rural.....	5,680	4,204	191,329,262	108,544,733	76,765	59,160
Per cent of total.....	50.8	50.5	45.2	44.2	47.3	47.3
Washington.....	2,751	1,926	96,952,621	41,574,744	45,199	31,523
Urban.....	998	691	45,063,988	19,100,881	15,266	10,767
Per cent of total.....	36.3	35.9	46.6	46.0	33.8	34.2
Rural.....	1,753	1,235	51,888,633	22,464,863	29,933	20,756
Per cent of total.....	63.7	64.1	53.5	54.0	66.2	65.8
Oregon.....	1,602	1,406	44,023,548	28,359,089	18,523	14,459
Urban.....	479	439	22,156,618	14,053,215	9,001	6,049
Per cent of total.....	29.9	31.2	50.3	51.7	48.6	41.8
Rural.....	1,123	967	21,866,930	13,705,874	9,522	8,410
Per cent of total.....	70.1	68.8	49.7	48.3	51.4	58.2
California.....	6,839	4,997	282,647,201	175,467,806	100,355	77,224
Urban.....	4,035	2,995	165,073,502	103,093,810	63,046	48,130
Per cent of total.....	59.0	59.9	58.4	58.8	62.8	62.3
Rural.....	2,804	2,002	117,573,699	72,373,996	37,310	29,094
Per cent of total.....	41.0	40.1	41.6	41.2	37.2	37.7
Alaska.....	82	48	10,684,799	3,568,704	1,938	2,260
Rural.....	82	48	10,684,799	3,568,704	1,938	2,260
Per cent of total.....	100.0	100.0	100.0	100.0	100.0	100.0



## ccxcix

WAGE-EARNERS AND WAGES—continued.		MISCELLANEOUS EXPENSES.		COST OF MATERIALS USED.		VALUE OF PRODUCTS.	
Wages.							
1905.	1900	1905	1900	1905	1900	1905	1900
\$14,543,635	\$10,184,154	\$6,648,343	\$2,382,359	\$21,799,346	\$18,288,045	\$53,864,394	\$39,887,578
2,400,040	1,276,576	897,597	402,423	5,602,253	3,303,928	10,605,512	6,511,554
16.5	12.5	13.5	16.9	25.2	18.1	10.7	16.3
12,130,995	8,907,578	5,750,746	1,070,936	16,297,093	14,984,117	43,258,882	33,370,024
83.5	87.5	86.5	83.1	81.9	74.8	83.7	83.7
1,144,078	379,188	402,539	86,112	4,848,646	1,697,829	7,909,451	2,629,067
1,144,078	379,188	402,539	86,112	4,848,646	1,697,829	7,909,451	2,629,067
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1,655,324	514,879	979,016	170,958	11,545,306	3,732,618	16,549,656	5,504,869
608,550	200,500	541,962	51,082	3,063,337	854,138	4,871,392	1,493,998
36.8	30.0	55.4	20.9	26.5	22.9	29.4	27.1
1,046,765	314,319	437,054	110,876	8,481,969	2,878,480	11,678,264	4,010,871
63.2	61.0	44.6	70.1	73.5	77.1	70.6	72.9
24,468,042	16,911,681	12,215,472	5,454,510	91,603,630	54,388,303	150,528,389	92,894,433
10,020,911	8,545,084	6,006,772	2,995,067	35,990,378	23,096,060	63,341,348	42,274,420
44.6	50.5	49.2	54.9	39.3	43.0	42.1	45.5
13,548,031	8,305,007	6,208,700	2,458,641	55,613,252	30,601,643	87,187,041	50,620,013
55.4	49.7	50.8	45.1	60.7	56.4	57.9	54.5
145,233,703	91,490,874	57,759,945	25,483,720	465,301,689	339,565,198	806,228,548	556,635,017
73,179,548	47,422,118	32,910,858	15,821,561	240,015,509	174,391,838	417,666,621	289,631,309
50.4	51.8	57.0	62.1	51.6	51.4	51.8	52.0
72,054,155	44,068,756	24,846,087	9,662,159	225,286,120	165,173,360	388,561,924	267,003,708
40.6	48.2	43.0	37.9	48.4	48.6	48.2	48.0
20,226,163	22,311,246	12,532,023	5,252,552	111,649,687	95,626,076	184,557,334	152,143,797
13,462,758	11,204,972	6,532,947	3,043,975	54,793,402	49,945,758	92,187,885	80,476,021
46.1	50.2	52.1	58.0	49.1	52.2	50.0	52.9
15,763,405	11,109,274	5,999,076	2,208,577	56,856,285	45,680,318	92,369,449	71,667,776
53.9	49.8	47.9	42.0	50.9	47.8	50.0	47.1
8,652,217	7,376,822	4,052,081	1,585,758	40,930,060	30,068,101	66,415,452	52,744,097
4,406,420	3,888,833	3,087,877	792,885	28,090,887	18,834,332	45,316,127	32,629,120
52.0	52.7	76.2	50.0	68.6	62.6	68.2	61.9
4,155,797	3,487,089	964,204	792,873	12,839,173	11,233,769	21,099,325	20,115,877
48.0	47.3	23.8	50.0	31.4	37.4	31.8	38.1
2,050,391	818,239	1,111,609	142,421	4,068,523	1,438,808	8,798,743	3,001,442
2,050,391	81						

## CHAPTER XIV.

### EXPORTS AND IMPORTS.<sup>1</sup>

For the fiscal year ending June 30, 1905, the total foreign commerce of the United States, exclusive of imports and exports of silver and gold coin and bullion, was valued at \$2,636,074,737, a new high mark in the history of the country for a fiscal year and an absolute increase of \$391,650,471, or 17.5 per cent, over the total for the fiscal year of 1900. Since 1880 the foreign commerce of the United States has increased in value 75 per cent, a rate of increase unequalled by any of the other great commercial countries during the same quarter of a century. Notwithstanding this enormous increase, however, the value of the foreign commerce of both the United Kingdom and the German Empire exceeded that of the United States throughout the period.

Analysis of this supremacy of the United Kingdom and the German Empire in commerce shows that it results more from their necessities as great manufacturing nations than from their preeminence as producers of merchandise. The United Kingdom is compelled to import immense quantities of foodstuffs for the sustenance of the millions dependent upon the factories and workshops of the country, and, in addition, must buy from other lands the raw materials necessary for the great textile industries of England. Thus it is not surprising that the value of the imports into the United Kingdom for 1904 was greater than

the value of the total foreign commerce of the United States for the fiscal year ending June 30, 1905, and that imports of food, drink, and tobacco alone reached a total value greater than that of all the imports entering the United States for the same period. Similarly, though not to so great an extent, Germany is dependent upon foreign countries for foodstuffs and for raw materials for several of the industries now flourishing in the Empire. In marked contrast to these two nations is the United States, whose resources, both agricultural and mineral, are amply sufficient to supply the majority of the great staples required by the home market and to furnish in addition a large surplus for export. It follows that for both the United Kingdom and the German Empire the imports far exceed the exports, whereas for the United States the reverse is true. In 1904 the value of this excess of imports for the United Kingdom was \$1,218,219,000 and for the German Empire \$271,674,000, whereas the value of the excess of exports credited to the United States for the year ending June 30, 1905, was \$374,232,000.

*Domestic exports.*—Statistics of exports of domestic products indicate the importance of the great commercial nations as producers of merchandise for the markets of the world. Table CCXLIII shows the exports of this nature for the four leading commercial countries from 1900 to 1904.

TABLE CCXLIII.—EXPORTS OF DOMESTIC MERCHANDISE FOR THE FOUR LEADING COMMERCIAL COUNTRIES: 1900 TO 1904.<sup>1</sup>

COUNTRY.	1904	1903	1902	1901	1900
United States.....	\$1,425,711,000	\$1,457,647,000	\$1,333,268,000	\$1,438,079,000	\$1,453,010,000
United Kingdom.....	1,463,410,000	1,415,179,000	1,379,283,000	1,302,729,000	1,417,086,000
German Empire.....	1,242,987,000	1,193,483,000	1,113,313,000	1,054,685,000	1,097,509,000
France.....	850,035,000	820,685,000	820,671,000	774,408,000	792,678,000

<sup>1</sup> Bureau of Statistics, Department of Commerce and Labor, Monthly Summary of Commerce and Finance, November, 1906, page 1090.

Throughout the period covered by the table, which is for calendar years, the United States and the United Kingdom were the leaders in exports of domestic products. For three out of the five years the United States was supreme in this field of commerce. The German Empire, however, showed the greatest and most consistent increases for the five years, the exports of domestic products rising in value from \$1,097,509,000 in 1900 to \$1,242,987,000 in 1904.

<sup>1</sup> This chapter was prepared by Francis C. Wilson, of the division of manufactures.

Under the new grouping of exports and imports recently adopted by the Bureau of Statistics of the Department of Commerce and Labor a distinction is made between manufactured merchandise and raw materials practically identical with that of the Census Bureau, and the growing preponderance of the former group of exports is revealed clearly. Table CCXLIV shows the six great groups into which the exports of domestic products are now classified, so arranged that the aggregate values of manufactured and of unmanufactured exports may be compared for the years from 1896 to 1905.

# EXPORTS AND IMPORTS.

ccci

TABLE CCXLIV.—EXPORTS OF DOMESTIC MERCHANDISE BY GREAT GROUPS: 1896 TO 1905.<sup>1</sup>

YEAR.	Aggregate value.	EXPORTS UNMANUFACTURED.					EXPORTS MANUFACTURED.				
		Total.		Foodstuffs in crude con- dition and food animals.	Crude mate- rials for use in manufact- uring.	Miscellane- ous—animals not for food, plants, trees, etc.	Total.		Foodstuffs partly or wholly pre- pared.	Manufac- tures for fur- ther use in manufactur- ing.	Manufac- tures ready for con- sumption.
		Value.	Per cent of aggre- gate.				Value.	Per cent of aggre- gate.			
1905.....	\$1,491,744,641	\$597,254,387	40.0	\$118,185,098	\$472,065,309	\$6,403,980	\$894,490,254	60.0	\$283,064,080	\$209,361,544	\$402,064,080
1904.....	1,435,179,017	603,023,344	42.0	135,747,224	461,716,328	5,559,792	832,155,073	58.0	308,835,694	174,574,136	348,745,843
1903.....	1,302,231,302	601,088,074	43.2	185,308,064	408,679,699	7,100,911	791,142,628	56.8	323,244,251	140,415,020	327,482,757
1902.....	1,355,481,861	572,785,660	42.3	184,786,389	373,595,243	14,404,028	782,606,201	57.7	328,831,350	131,918,311	321,940,540
1901.....	1,460,462,806	658,079,436	45.1	246,394,140	397,767,463	13,917,833	802,383,370	54.9	336,605,378	148,013,025	317,704,367
1900.....	1,370,703,571	567,790,834	41.4	227,347,193	325,589,000	14,854,641	802,972,787	58.6	318,126,602	152,890,591	331,955,644
1899.....	1,203,931,122	518,780,543	43.1	232,903,066	277,723,374	8,163,103	685,141,579	56.9	304,754,736	117,730,260	262,656,583
1898.....	1,210,201,913	600,884,165	49.6	305,108,915	286,311,334	9,463,916	609,407,748	50.4	284,879,827	101,990,503	222,537,358
1897.....	1,032,007,603	485,712,308	47.1	181,420,814	296,834,858	7,456,036	546,295,295	52.9	235,051,930	98,284,243	212,959,122
1896.....	863,200,487	385,778,028	44.7	128,550,069	251,817,571	5,409,788	477,422,469	55.3	210,413,574	70,219,728	181,789,157

<sup>1</sup> Bureau of Statistics, Department of Commerce and Labor, Annual Review of Foreign Commerce, year ending June 30, 1906, page 42.

In 1905 exports of domestic merchandise were valued at \$1,491,744,641, of which the value of articles partly or wholly manufactured comprised 60 per cent. In 1896 this proportion was 55.3 per cent, but fell to 50.4 in 1898, owing to immense exportations of grain, which carried the exports of unmanufactured merchandise to a point previously unequaled. After 1898, however, the proportion of unmanufactured exports diminished in importance until in 1905 it reached the lowest point in the history of the export trade of the country. The table shows that this decrease in relative importance did not result from any falling off in the value of unmanufactured merchandise exported, which, indeed, increased considerably during the ten years, but was due to the more rapid increase in exports of manufactured goods. The percentages of increase given in Table CCXLV illustrate this fact more graphically than does Table CCXLIV.

TABLE CCXLV.—Per cent of increase in value of domestic exports, by groups: 1896 to 1905.

GROUP.	Per cent of increase.
Aggregate.....	72.8
Exports unmanufactured.....	54.8
Foodstuffs in crude condition and food animals.....	18.1
Crude materials for use in manufacturing.....	87.7
Miscellaneous—animals not for food, plants, trees, etc.....	18.4
Exports manufactured.....	87.4
Foodstuffs partly or wholly prepared.....	29.0
Manufactures for further use in manufacturing.....	174.7
Manufactures ready for consumption.....	121.2

<sup>1</sup> Decrease.

The table shows that the aggregate value of exports of domestic merchandise increased 72.8 per cent during the ten years, but the value of exports of unmanufactured merchandise increased only 54.8 per cent, against an increase of 87.4 per cent in the value of manufactured exports. Under unmanufactured exports "foodstuffs in crude condition and food animals," which includes chiefly grains and live animals, decreased 8.1 per cent, while "crude materials for use

in manufactures," principally cotton, coal, tobacco, and crude mineral oil, increased 87.7 per cent. Under manufactured exports "foodstuffs partly or wholly prepared," composed chiefly of meats and dairy products, flour, oil cake, cottonseed oil, and dried and preserved fruits and vegetables, increased only 29 per cent, but "manufactures for further use in manufacturing," made up largely of copper in pigs, bars, and ingots, iron and steel partly manufactured, leather, lumber, and naval stores, increased 174.7 per cent, and "manufactures ready for consumption," which is composed chiefly of iron and steel manufactures in finished form, refined mineral oil, manufactures of cotton, agricultural implements, cars, carriages, boots and shoes, and manufactures of wood, increased 121.2 per cent. The increases in the two latter groups, therefore, were by far the leading features of our export trade during the past decade.

*Relation of exports of domestic manufactures to domestic production.*—Previous to the recent changes in the grouping of exports and imports already referred to, it was difficult to estimate with any accuracy what proportion the value of exports of domestic manufactures formed of the value of the total production of manufactures during a census year. This condition was due in large part to the fact that the Treasury Department, and later the Bureau of Statistics of the Department of Commerce and Labor, classed as products of agriculture and the forests large quantities of domestic exports which were considered as true products of manufactures by the Bureau of the Census. While this obstacle has been removed by the new grouping of exports and imports, others yet remain which seriously impair the value of such a comparison. These difficulties result from unavoidable differences in the respective methods by which Census statistics and statistics of exports are obtained.

Prior to the census of 1905 the statistics of manufactures collected by the Bureau of the Census included the value of the output of the mechanical trades and neighborhood industries. Since the products of these branches of industry either do not conform individually to a single standard or are not produced to supply a

general demand, but are consumed or utilized only in the immediate neighborhood in which they are produced, they can not be said to have the essential characteristics of true manufactures, which are in the main production for general consumption and the standardization of processes and products. Neither the mechanical trades nor the neighborhood industries, from the very nature of their functions in the industrial world, can ever contribute to the exports of manufactures. Therefore Census figures anterior to 1905, including values of a class not properly assignable to manufactures, are not strictly comparable with statistics of exports of domestic manufactures. It is probable that from 10 to 15 per cent of the value of the manufactured output of the United States, as reported by censuses prior to 1905, was made up of products of the mechanical trades and the neighborhood industries.

Furthermore, the duplications which have inflated the gross value of products at every census constitute additional reasons against the use of comparisons of Census figures and statistics of exports. The cause of these duplications of value is explained at length in Chapter VI, and the impossibility of correctly eradicating them indicated. A brief restatement of their nature is essential here to give a clear understanding of their effect on comparisons of Census and export values.

During the census year the values of large quantities of manufactured articles are reported as the finished products of many factories which are consumed in the same year as materials for other establishments. The reports of the value of the output of the latter necessarily include the value of the partially manufactured articles constituting them, which is thus included twice and often several times in the gross value of products for the census year. Obviously this source of inflation does not exist in export values, for while the value of exported manufactures necessarily includes the cost of all materials which constitute them, yet the value of these materials can enter into export figures from this source only, and hence occurs but once. Accordingly in attempting to compare the statistics it must be remembered that Census values are considerably inflated by duplications which do not exist in export values.

In Table CCXLVI are presented the value of products of manufactures according to Census figures and the value of exports of domestic manufactures for each census year for the last quarter of a century, together with the percentages of increase shown by each during the intercensal periods. The table also shows the ratio of the value of domestic exports of manufactures to the value of the domestic production for the census years. For the reasons stated in the foregoing paragraphs these percentages should not be accepted as indicating the actual proportion of the annual production which was exported. They are presented because they furnish the only means of measuring the variations in

the ratio between the two values. The figures for 1880, 1890, and 1900 have been revised so as to exclude, as far as the returns of each census permit, the values for the mechanical trades and the neighborhood industries.

TABLE CCXLVI.—*Value of products of domestic manufactures, according to Census reports, and of domestic manufactures exported: 1880 to 1905.*

YEAR.	Value of products (Census).	Value of exports of domestic manufactures. <sup>1</sup>	Per cent of domestic production exported.
1905	\$14,802,147,087	\$894,490,254	6.0
Per cent of increase	29.7	11.4	
1900	<sup>2</sup> 11,411,121,122	802,972,737	7.0
Per cent of increase	37.8	98.9	
1890	<sup>2</sup> 8,282,180,175	403,738,022	4.9
Per cent of increase	62.9	25.1	
1880	<sup>2</sup> 5,084,943,000	315,171,021	6.2

<sup>1</sup> Bureau of Statistics, Department of Commerce and Labor, Annual Review of Foreign Commerce, year ending June 30, 1906, page 42.

<sup>2</sup> Revised so as to exclude the mechanical trades and neighborhood industries, which, however, could not be eliminated entirely for 1880 and 1890.

Both the value of the products according to Census figures and the value of exports of manufactures nearly tripled during the quarter of a century considered by the table. There were, however, considerable variations in the rate of increase from decade to decade. The most remarkable variation between the growth of exports and of the domestic production of manufactures occurred between 1890 and 1900, when the former increased 98.9 per cent and the latter only 37.8 per cent.

In considering the column in which is presented the per cent of the total value of products of domestic manufactures that were exported it must be remembered that Census values were inflated to about the same degree, approximately, in each year, so that if the source of the inflation could be removed and the true per cent obtained, the variations in the percentages from census to census would not differ materially from those presented in the table. The percentages, then, indicate that from decade to decade the proportion of the value of the total production of manufactures which were exported was subject only to slight changes. In fact, the proportion at the end of the quarter of a century was apparently about the same as at the commencement.

While it is impossible to determine the actual extent of the inflation of values in Census figures, it is certain, as already pointed out in Chapter VI, that it does not equal the cost of the partially manufactured materials which enter into the products. However, by eliminating the cost of these materials from the total value of the products there will result a sum which, though too small, will more nearly represent the actual value of the production of manufactures during a census year than the gross value which is presented in the table. The value of the partially manufactured materials was not segregated previous to 1900, and thus the calculation can not be made for either 1880 or 1890.

# EXPORTS AND IMPORTS.

cciii

For 1905 the value remaining after deducting the cost of the partially manufactured materials and mill supplies was \$9,821,205,387, and the proportion which the value of exports of domestic manufactures formed of this value was 9.1 per cent. But the per cent is too great, because, by the elimination of the cost of all the partially manufactured materials, a sum considerably greater than the actual duplication contained in the

gross total was deducted. Thus in 1905 the actual proportion of the total value of the output of manufactures which was exported must have been between 6.2 and 9.1 per cent.

The reports on foreign commerce of the Bureau of Statistics show the leading exports of manufactured goods. Table CCXLVII presents the value of these manufactures for the past five years.

TABLE CCXLVII.—VALUE OF PRODUCTS OF DOMESTIC MANUFACTURE EXPORTED: 1900 TO 1905.

	1905	1904	1903	1902	1901	1900
Total exports of manufactures.....	\$94,400,254	\$832,155,673	\$701,142,628	\$782,696,201	\$802,383,370	\$802,972,737
Per cent of total exports.....	60.0	58.0	56.8	57.8	54.0	58.6
<b>Agricultural implements:</b>						
Mowers and reapers, and parts of.....	10,559,891	11,568,062	10,326,641	8,818,370	9,043,680	11,243,763
Plows and cultivators, and parts of.....	2,832,000	3,537,810	3,109,001	2,791,092	1,838,373	2,178,098
All other, and parts of.....	7,209,790	7,043,763	7,510,020	4,077,278	4,481,381	2,677,288
Aluminum, and manufactures of.....	175,850	183,197	133,256	118,268	221,240	244,091
Art works: Paintings and statuary.....	410,593	409,094	512,558	250,069	344,287	263,443
Asbestos, and manufactures of.....	234,553	183,902	133,427	132,842	135,258	93,600
Asphaltum, and manufactures of.....	201,120	160,186	104,580	89,954	97,851	121,751
Babbitt metal.....	67,215	42,373	44,635	30,750	102,000	70,145
Beeswax.....	24,906	16,545	21,357	36,541	36,464	91,913
Billiard balls.....	1,407	656	4,228	2,057	1,607	1,198
<b>Blacking:</b>						
Stove polish.....	64,134	70,394	198,152	236,762	321,237	418,374
All other.....	535,232	527,003	511,136	462,670	478,658	462,224
Books, maps, engravings, etchings, and other printed matter.....	4,844,100	4,347,304	4,442,653	3,997,977	3,472,343	2,943,435
Brass, and manufactures of.....	3,025,764	2,557,484	2,000,432	1,930,810	2,007,460	1,856,727
<b>Breadstuffs:</b>						
Bread and biscuit.....	645,900	635,133	589,536	604,136	606,811	938,513
Corn meal.....	1,113,295	1,091,069	1,382,127	1,046,643	2,065,432	2,148,410
Oatmeal.....	1,423,742	463,062	1,839,106	1,617,298	2,308,640	1,547,900
Rye flour.....	19,618	11,302	12,818	8,403	10,860	14,757
Wheat flour.....	40,176,136	98,894,836	73,756,404	65,661,674	60,450,296	67,790,880
Preparations of, for table food.....	2,064,790	2,172,571	2,667,409	2,205,018	2,832,930	2,362,715
All other, for animal feed—						
Bran, middlings, and mill feed.....	722,582	366,213	945,053	962,505	1,383,246	2,638,719
Dried grains and malt sprouts.....	1,485,671	1,062,336	1,320,065	1,157,636	962,836	(1)
All other.....	845,999	602,521	661,131	629,797	584,838	1,470,448
<b>Bricks:</b>						
Building.....	210,887	112,200	26,310	51,350	91,640	116,128
Fire.....	431,614	387,227	403,508	440,161	564,968	400,353
Brooms and brushes.....	327,083	275,522	283,994	261,720	254,047	232,068
Candles.....	701,357	510,183	514,753	286,531	236,547	101,687
Carbon.....	41,803	38,350	44,494	62,513	16,540	13,210
<b>Cars, carriages, other vehicles, and parts of:</b>						
Automobiles, and parts of.....	2,481,243	1,895,605	1,207,065	948,528	(1)	(1)
Cars, passenger and freight, and parts of—						
For steam railways.....	1,934,352	2,607,592	2,687,303	3,017,537	4,195,019	2,558,823
For other railways.....	1,210,659	763,144	915,273	788,816	1,410,930	984,854
Cycles, and parts of.....	1,378,423	1,965,026	2,132,629	2,627,572	2,515,804	3,553,149
Wheelbarrows, push carts, and hand trucks.....	276,117	350,450	(1)	(1)	(1)	(1)
All other carriages, and parts of.....	3,320,641	3,354,801	3,556,925	2,490,063	2,790,178	2,809,784
Celluloid, and manufactures of.....	294,979	246,601	240,438	189,974	211,781	174,310
Cement.....	1,484,705	530,216	410,361	651,526	438,915	163,162
Chalk, crayons, etc.....	59,089	47,616	37,238	26,313	20,064	27,460
Charcoal.....	23,470	22,640	5,118	4,920	4,164	1,598
Chewing gum.....	14,923	10,805	27,242	9,062	11,686	8,725
<b>Chemicals, drugs, dyes, and medicines:</b>						
Acids.....	325,020	245,813	219,568	235,458	198,323	147,233
Ashes, pot and pearl.....	30,150	56,800	60,376	62,520	56,072	49,506
Baking powder.....	437,837	326,231	397,965	363,835	202,081	(1)
Copper, sulphate of.....	700,024	1,133,080	736,137	1,242,914	2,324,738	2,120,745
Dyes and dyestuffs.....	475,334	517,878	619,645	531,225	394,278	498,905
Lime, acetate of.....	1,245,776	1,103,389	987,067	962,265	1,101,037	776,413
Medicines, patent or proprietary.....	4,911,005	3,897,793	3,407,696	3,137,890	3,440,177	2,990,153
Medicines, patent or proprietary.....	310,602	340,890	352,537	299,821	(1)	(1)
Washing powders or mixtures, etc.....	5,024,736	5,730,235	5,800,480	5,305,074	5,505,925	5,540,358
All other.....	61,204	103,314	84,084	21,869	61,132	64,283
<b>Cider.....</b>						
Clocks and watches:						
Clocks, and parts of.....	1,192,246	1,186,279	1,091,724	1,146,381	1,206,222	1,190,074
Watches, and parts of.....	1,124,168	1,094,916	1,041,805	998,109	1,044,529	787,620
Coal and coke: Coke.....	2,228,442	2,223,233	1,912,459	1,720,457	1,433,497	1,233,921
Coal tar.....	50,252	19,284	15,531	41,062	(1)	(1)
Cocoa, ground or prepared, and chocolate.....	279,810	250,084	213,476	166,245	333,036	231,509
Coffee, roasted or prepared.....	82,451	64,516	89,890	71,152	(1)	(1)
<b>Coins, United States:</b>						
Copper.....	(1)	37	41	200	395	2,040
Nickel.....	(1)	11,408	2,650	1,635	5,478	21,193
<b>Copper manufactures:</b>						
Ingots, bars, plates, and old.....	81,795,226	54,870,672	37,354,061	39,100,619	41,280,376	55,772,166
All other manufactures.....	4,430,065	2,272,009	2,313,135	2,027,754	2,006,645	2,080,794
Copper residue.....	24,820	41,344	42,385	(1)	(1)	(1)
Cork, manufactures of.....	47,625	39,581	33,844	46,044	36,717	29,264
<b>Cotton manufactures:</b>						
Cloths—						
Colored.....	7,325,408	5,430,277	8,443,148	7,359,288	6,554,225	4,839,491
Uncolored.....	33,995,134	9,256,922	16,909,436	18,501,908	7,581,812	13,279,443
Wearing apparel.....	3,477,652	2,700,420	2,600,136	2,690,592	1,654,536	1,002,608
Waste, cotton mill.....	1,040,356	1,585,765	1,294,064	667,653	1,203,250	610,120
Yarn.....	310,237	172,286	(1)	(1)	(1)	(1)
All other.....	3,517,293	3,249,043	2,969,520	3,458,921	3,278,595	3,721,425
Curios, antiques, etc.....	3,525	2,582	1,698	8,036	1,469	2,564
Dental goods.....	777,619	520,678	401,761	392,000	252,418	247,462
<b>Earthen, stone, and china ware:</b>						
Earthen and stone ware.....	796,491	614,130	519,159	549,571	460,220	519,489
China ware.....	84,336	78,704	63,900	51,227	52,603	57,213
Egg yolks.....	917	28,294	48,108	14,700	1,610	883

1 Not reported separately.

TABLE CCXLVII.—VALUE OF PRODUCTS OF DOMESTIC MANUFACTURE EXPORTED: 1900 TO 1905—Continued.

	1905	1904	1903	1902	1901	1900
Emery, and manufactures of:						
Emery.....	\$42,446	\$25,475	\$19,975	\$32,427	\$18,310	\$14,957
Manufactures of—						
Cloth.....	16,200	12,348	9,654	7,789	7,625	6,443
Paper.....	1,612	1,254	1,380	1,367	1,367	580
Wheels.....	287,843	288,387	216,345	183,230	163,774	148,320
Fertilizers: All other.....	734,612	595,116	380,077	367,440	377,567	841,857
Fibers, vegetable and textile grasses, manufactures of:						
Bags.....	321,884	301,413	387,840	416,462	460,802	397,740
Cordage.....	920,127	926,278	935,587	713,430	832,375	927,805
Twine.....	4,608,090	4,396,304	3,331,101	2,955,377	2,591,412	2,040,482
All other.....	826,708	790,581	636,420	489,041	409,107	460,808
Fish:						
Dried, smoked, or cured—						
Cod, haddock, hake, and pollock.....	214,056	167,103	148,557	270,440	345,597	404,212
Herring.....	53,986	44,336	33,632	57,287	84,239	82,407
All other.....	11,688	10,295	23,020	15,707	24,422	56,684
Pickled—						
Mackerel.....	17,014	7,848	7,360	15,634	16,858	14,352
All other.....	77,361	41,784	74,346	83,602	99,766	99,627
Salmon—						
Canned.....	3,035,469	5,224,598	4,350,791	3,991,402	4,230,271	2,663,648
All other, fresh or cured.....	1,832,655	1,163,489	869,352	694,435	426,738	535,276
Canned fish, other than salmon and shellfish.....	112,510	115,283	105,228	166,053	200,626	133,244
Caviare.....	31,313	16,462	41,851	118,486	118,486	100,786
All other fish and fish products.....	74,219	70,039	77,776	120,302	37,021	24,044
Fly paper.....	72,891	95,341	38,579	65,337	(1)	(1)
Fruits:						
Apples, dried.....	2,208,414	2,791,421	2,378,635	1,190,593	1,510,581	2,247,851
Apricots, dried.....	606,777	608,511	713,887	178,143	(1)	(1)
Prunes.....	2,455,056	3,410,497	3,512,507	1,404,422	589,113	1,646,332
Raisins.....	372,087	281,402	284,530	149,216	218,715	139,689
Preserved—						
Canned.....	2,541,025	2,637,002	1,739,571	1,195,635	3,006,109	3,127,278
All other.....	71,868	115,490	66,757	94,323	71,597	63,448
Furniture of metal.....	214,957	147,456	124,859	224,285	271,289	289,795
Furs and fur skins.....	6,599,222	5,422,945	6,181,115	5,030,204	4,404,448	4,503,968
Ginger ale.....	1,297	1,033	1,911	1,963	3,420	4,930
Glass and glassware:						
Window glass.....	65,899	71,498	59,519	51,952	55,286	36,218
All other.....	2,186,930	1,900,983	2,061,180	1,908,154	2,071,023	1,899,901
Glucose or grape sugar.....	3,206,794	2,949,545	2,460,022	2,319,286	3,113,898	3,600,139
Glue.....	279,534	258,511	253,768	284,413	254,447	225,844
Gold beaters' skins.....	600	800	1,140	1,000	1,000	750
Gunpowder and other explosives:						
Gunpowder.....	149,466	136,383	151,658	224,779	193,345	197,438
All other explosives.....	2,410,371	2,305,213	2,302,852	1,837,602	1,518,757	1,694,166
Hair, and manufactures of.....	778,471	724,514	616,133	633,337	674,881	676,688
Household and personal effects.....	3,146,969	2,615,076	2,652,787	2,570,369	2,880,765	2,500,660
India rubber, and manufactures of:						
India rubber, reclaimed.....	522,502	178,335	93,265	206,977	229,365	203,853
India rubber, scrap and old.....	204,945	534,500	404,586	362,721	412,728	492,284
Belting, hose, and packing.....	994,100	880,010	819,985	634,146	565,726	541,830
Boots and shoes.....	1,214,342	1,086,304	1,056,491	1,046,315	724,015	420,746
All other.....	2,572,375	2,469,750	2,299,875	1,781,941	1,727,527	1,405,212
Ink:						
Printer's.....	276,330	238,314	220,544	189,003	171,758	145,321
All other.....	162,556	136,021	138,103	119,098	119,467	114,455
Instruments and apparatus for scientific purposes:						
Electrical appliances, including telegraph and telephone instruments.....	4,962,972	4,861,204	4,206,617	3,631,759	(1)	(1)
All other.....	3,210,008	3,436,519	2,923,891	1,757,717	7,361,231	6,435,766
Iron and steel, and manufactures of:						
Pig iron.....	828,123	605,976	362,068	898,118	3,764,583	3,124,753
Scrap and old, fit only for remanufacture.....	270,224	248,093	96,107	216,272	544,394	749,495
Bar iron.....	1,180,901	936,145	721,284	778,708	884,094	738,120
Bars or rods of steel—						
Wire rods.....	592,732	503,298	1,059,130	405,445	336,680	513,866
All other.....	1,470,859	1,014,934	802,173	810,737	2,651,089	1,444,522
Billets, ingots, and blooms.....	4,515,586	3,582,126	68,064	78,355	3,158,239	441,605
Hoop, band, and scroll.....	127,103	145,715	78,745	85,568	167,942	70,186
Rails for railways—						
Iron.....	3,036	30,005	3,154	23,472	32,567	138,304
Steel.....	10,288,346	4,253,376	710,886	4,613,024	10,841,189	9,218,144
Sheets and plates—						
Iron.....	316,449	313,474	191,332	290,139	498,964	549,975
Steel.....	2,788,571	839,922	734,151	593,177	1,752,873	1,249,576
Tin plates, terne plates, and taggers tin.....	880,810	306,930	66,010	99,792	66,550	19,062
Structural iron and steel.....	3,622,320	1,943,281	1,963,797	3,202,020	3,357,023	2,835,588
Wire.....	6,264,918	5,821,921	5,172,140	5,278,454	4,104,563	5,982,400
Builders' hardware, saws, and tools—						
Locks, hinges, and other builders' hardware.....	5,402,036	6,156,170	7,461,594	5,938,156	5,569,903	5,915,929
Saws.....	550,869	563,459	413,679	319,464	327,859	267,023
Tools, not elsewhere specified.....	5,487,923	5,006,562	4,189,551	3,586,482	3,306,751	3,465,072
Car wheels.....	177,638	159,706	156,601	156,388	203,396	166,829
Castings, not elsewhere specified.....	1,330,228	1,544,850	1,916,091	1,472,264	1,135,453	1,576,174
Cutlery—						
Table.....	90,060	107,826	69,848	46,062	33,647	91,083
All other.....	347,328	339,812	253,662	211,966	200,640	205,712
Firearms.....	1,399,120	1,520,396	1,002,410	937,081	958,324	1,403,915
Machinery, machines and parts of—						
Cash registers.....	2,036,107	1,836,233	1,475,199	1,144,062	873,121	813,006
Electrical machinery.....	7,290,932	5,045,809	5,779,459	5,379,746	5,812,715	4,340,992
Laundry machinery.....	518,800	553,912	512,108	536,716	479,274	441,562
Metal working machinery.....	4,332,665	3,716,709	2,826,111	2,977,200	4,054,313	7,193,390
Printing presses, and parts of.....	1,470,156	1,396,746	1,050,773	808,943	1,005,929	1,219,774
Pumps and pumping machinery.....	3,116,088	2,703,397	2,715,553	2,159,999	2,187,246	3,112,552
Sewing machines, and parts of.....	6,104,279	5,623,423	5,105,852	4,022,097	4,095,693	4,541,774
Shoe machinery.....	1,273,015	1,071,030	719,797	966,582	953,898	1,163,265
Steam engines, and parts of—						
Fire.....	16,856	12,527	19,650	28,956	23,370	14,015
Locomotive.....	3,617,010	5,261,422	3,219,778	3,257,894	4,039,006	5,562,403
Stationary.....	991,852	1,069,401	725,294	709,975	901,888	673,197
Boilers and parts of engines.....	2,280,362	2,169,753	2,485,226	1,791,062	1,696,385	1,767,856
Typewriting machines, and parts of.....	4,745,285	4,537,125	3,666,741	3,302,191	2,827,320	2,697,544
Woodworking machinery.....	613,578	738,609	(1)	(1)	(1)	(1)
All other.....	24,656,066	19,894,135	20,387,065	20,505,421	20,864,352	21,913,202

(1) Not reported separately.

# EXPORTS AND IMPORTS.

CCCV

TABLE CCXLVII.—VALUE OF PRODUCTS OF DOMESTIC MANUFACTURE EXPORTED: 1900 TO 1905—Continued.

	1905	1904	1903	1902	1901	1900
Iron and steel, and manufactures of—Continued.						
Nails and spikes—						
Cut.....	\$404,400	\$445,033	\$347,007	\$318,539	\$575,285	\$647,711
Wire.....	1,793,230	1,517,876	1,245,946	947,272	982,313	2,124,528
All other, including tacks.....	397,974	300,054	290,862	258,655	257,700	278,700
Pipes and fittings.....	8,143,187	6,310,551	5,431,459	5,153,080	5,139,895	7,024,888
Sales.....	286,305	222,842	184,706	156,860	112,008	140,637
Scales and balances.....	674,771	652,303	650,250	517,758	532,640	536,040
Stoves, ranges, and parts of.....	855,223	881,603	961,502	811,836	548,716	535,385
All other manufactures of iron and steel.....	11,183,892	9,435,056	9,048,992	12,749,284	15,459,491	15,322,922
Ivory, manufactures of, and scrap.....	54,646	60,836	68,816	33,664	18,495	22,824
Jewelry and other manufactures of gold and silver:						
Jewelry.....	1,033,808	964,659	939,797	1,069,050	1,017,881	892,327
All other manufactures of gold and silver.....	385,417	400,995	353,224	269,291	211,791	251,311
Lamps, chandeliers, and all other devices for illuminating purposes.....	1,579,125	1,502,888	1,133,290	963,638	1,021,435	978,874
Lead, and manufactures of:						
Pigs, bars, and old.....	2,508	4,384	15,527	282,405	285,158	14,081
Type.....	167,585	128,471	137,875	191,090	137,803	125,271
All other manufactures of.....	497,101	405,165	299,300	224,840	248,718	191,705
Leather, and manufactures of:						
Sole leather.....	9,444,873	6,978,497	6,920,407	6,569,857	6,577,732	6,433,303
Upper leather—						
Kid glazed.....	1,570,204	1,512,179	1,965,200	1,755,590	1,561,352	1,909,914
Patent or enameled.....	166,320	170,940	122,782	82,868	101,708	101,708
Splits, buff, grain, and all other upper.....	15,057,791	15,049,002	13,493,499	12,817,017	11,841,610	11,913,255
All other leather.....	1,813,154	1,140,364	982,251	1,056,731	1,257,084	1,438,976
Manufactures of—						
Boots and shoes.....	8,057,697	7,238,940	6,665,017	6,182,098	5,626,290	4,276,656
Harness and saddles.....	502,660	500,346	373,677	378,775	289,089	505,467
All other.....	1,318,946	1,329,747	1,064,496	887,316	787,628	713,730
Lime.....	64,970	52,984	32,694	42,674	34,562	85,854
Malt.....	342,851	315,076	262,801	266,090	250,090	215,198
Marble and stone manufactures:						
Roofing slate.....	424,777	726,715	628,612	945,352	898,262	950,543
All other.....	630,443	645,286	641,753	644,071	646,332	606,220
Matches.....	52,834	68,003	50,330	57,742	88,739	95,422
Metal polish.....	37,091	37,688	32,274	(1)	(1)	(1)
Mica.....	2,611	1,118	4,615	3,857	508	3,406
Machinery.....	11,417	12,527	12,563	15,855	8,907	8,275
Musical instruments:						
Organs.....	898,878	1,095,415	1,137,713	1,186,745	1,098,521	993,309
Pianofortes.....	513,725	404,454	419,020	421,614	335,219	355,065
Pianolas and other piano players.....	842,817	889,951	(1)	(1)	(1)	(1)
All other, and parts of.....	889,367	841,162	1,824,767	2,085,784	1,347,056	609,805
Naval stores:						
Rosin.....	7,000,084	6,621,870	4,817,205	4,202,104	4,742,457	3,796,367
Tar.....	60,520	44,944	50,802	55,851	77,609	77,082
Turpentine and pitch.....	74,938	32,263	36,379	44,356	45,795	45,823
Turpentine, spirits of.....	8,902,101	9,446,155	8,014,322	7,431,248	7,716,029	8,554,922
Nickel, and manufactures of:						
Nickel oxide and matte.....	3,196,022	940,558	864,221	1,190,606	1,510,508	1,219,812
Manufactures of.....	97,083	54,205	97,787	12,623	15,428	447
Notions, not elsewhere specified.....	71,003	50,360	186,653	485,086	613,895	602,948
Oakum.....	32,871	34,020	20,740	28,134	23,156	30,474
Oil cake and oil-cake meal:						
Corn.....	278,526	169,921	95,508	164,056	131,774	48,783
Cottonseed.....	13,807,178	9,134,088	12,732,497	12,271,009	13,119,908	11,220,188
Flaxseed or linseed.....	7,600,907	7,765,169	7,011,214	7,508,193	5,471,930	5,528,331
Oilcloths:						
For floors.....	52,043	45,571	56,902	67,300	70,269	46,005
All other.....	217,286	185,726	164,515	121,991	102,366	95,012
Oils:						
Animal—						
Fish.....	266,461	213,257	377,551	358,533	293,004	184,403
Lard.....	154,409	244,499	306,334	327,794	438,645	337,260
Whale.....	11,023	10,107	13,174	22,835	28,376	24,766
All other.....	217,596	273,481	150,505	201,535	258,406	172,568
Mineral, refined or manufactured—						
Naphthas, including all lighter products of distillation.....	2,575,851	1,892,207	1,225,661	1,677,738	1,565,608	2,016,802
Illuminating.....	59,160,606	57,902,503	47,078,931	53,390,345	51,477,267	55,979,566
Lubricating and heavy paraffin.....	13,142,860	12,048,842	12,052,927	10,274,743	10,006,937	9,744,367
Residuum, including tar and all other, from which the light bodies have been distilled.....	1,545,470	733,994	566,115	875,178	1,376,047	506,853
Vegetable—						
Corn.....	890,937	998,613	1,467,493	1,769,370	1,831,980	1,351,867
Cottonseed.....	15,125,802	10,717,280	14,211,244	12,902,393	16,541,321	14,127,538
Linseed.....	125,354	147,721	98,116	68,617	66,653	54,148
Volatile or essential—						
Peppermint.....	135,060	124,728	34,943	54,898	63,672	90,208
All other.....	215,860	440,588	252,770	202,983	169,004	166,424
All other vegetable.....	139,219	189,451	169,796	220,372	363,056	554,781
Paints, pigments, and colors:						
Carbon black, gas black, and lampblack.....	501,736	329,013	299,587	284,472	305,063	214,559
Zinc, oxide of.....	605,526	672,436	446,786	433,486	412,719	474,206
All other.....	2,019,055	1,755,132	1,604,564	1,378,481	1,317,901	1,213,512
Paper, and manufactures of:						
Paper hangings.....	304,338	243,417	256,243	301,339	124,983	145,992
Playing cards.....	225,032	210,518	(1)	(1)	(1)	(1)
Printing paper.....	3,059,444	2,572,447	2,613,117	2,920,616	3,480,589	2,521,320
Writing paper and envelopes.....	975,099	887,181	901,700	744,029	532,769	463,248
All other.....	3,674,175	3,630,165	3,408,954	3,346,046	3,291,560	3,085,273
Paraffin and paraffin wax.....	7,789,160	8,859,904	9,411,294	8,858,844	6,857,288	8,602,723
Paste.....	11,396	6,313	5,631	2,251	803	1,733
Pencils, lead and slate.....	289,489	261,671	186,363	329,877	511,659	493,315
Pens and penholders.....	130,654	62,595	66,317	93,426	95,456	119,104
Perfumery and cosmetics.....	490,297	489,567	390,502	355,219	380,994	359,827
Photographic goods.....	133,929	127,501	758,320	2,109,533	1,998,445	1,386,122
Plaster, builders'.....	116,997	70,097	50,427	63,713	62,180	43,182
Plaster of Paris.....	16,810	15,280	21,459	(1)	(1)	(1)
Plated ware.....	703,783	693,618	662,708	595,026	517,208	509,776
Platinum, and manufactures of, and scrap.....	10,516	12,097	15,786	8,721	3,079	61,088

1 Not reported separately.



TABLE CXXLVII.—VALUE OF PRODUCTS OF DOMESTIC MANUFACTURE EXPORTED: 1900 TO 1905—Continued.

	1905	1904	1903	1902	1901	1900
Provisions, comprising meat and dairy products:						
Meat products—						
Beef products—						
Beef, canned.....	\$0,588,958	\$5,882,888	\$7,016,928	\$0,646,130	\$5,307,501	\$5,233,982
Beef, fresh.....	22,138,365	26,841,580	25,013,323	29,045,056	31,851,361	20,043,830
Beef, salted or pickled.....	3,096,304	3,200,475	3,814,071	3,031,027	3,145,219	2,097,340
Beef, other cured.....	14,057	20,542	102,184	72,836	72,677	107,051
Tallow.....	3,022,173	3,801,302	1,023,852	1,924,577	3,848,561	4,308,204
Hog products—						
Bacon.....	25,428,961	24,446,752	22,178,525	35,449,797	37,499,020	38,975,915
Hams.....	21,502,204	22,203,807	25,712,033	25,222,744	22,842,778	20,410,367
Pork, canned.....	993,394	963,321	1,360,087	832,910	708,381	658,402
Pork, fresh.....	1,291,704	1,669,818	2,035,491	3,052,404	2,424,537	1,925,772
Pork, salted or pickled.....	9,412,034	9,527,388	9,959,702	10,117,592	9,926,633	8,243,797
Lard.....	47,243,181	46,347,520	50,854,504	52,375,804	46,600,148	41,939,164
Lard compounds, and substitutes for (cottonseed, lardine, etc.).....	3,613,235	3,581,813	3,067,542	2,087,653	1,440,878	1,476,064
Mutton.....	52,503	40,618	532,470	37,007	46,043	64,313
Oil and oleomargarine—						
Oil, the oil.....	11,485,145	12,873,558	11,981,888	12,254,909	11,846,373	10,503,856
Oleomargarine, imitation butter.....	711,038	605,874	708,273	601,521	484,501	416,544
Poultry and game.....	897,425	1,000,304	1,079,056	856,801	1,070,190	453,905
Sausage and sausage meats.....	671,241	602,528	585,088	729,437	923,974	(1)
Sausage casings.....	2,640,898	2,353,167	1,904,524	1,795,044	2,778,854	2,307,571
All other meat products—						
Canned.....	1,974,693	2,254,235	1,831,040	1,801,385	1,556,671	1,724,064
All other.....	2,267,350	2,062,813	2,101,785	3,024,764	3,212,000	3,941,394
Dairy products—						
Butter.....	1,648,281	1,768,184	1,604,327	2,885,609	4,014,905	3,143,500
Cheese.....	1,084,044	2,452,230	2,250,229	2,745,697	3,950,990	4,943,090
Milk.....	2,156,616	1,367,794	921,026	1,473,564	1,437,818	1,130,402
Quicksilver.....	653,337	834,764	702,201	425,728	400,208	550,142
Quills, crude and prepared.....	1,618	23,164	3,076	6,168	8,281	11,105
Rags and other paper stock.....	147,863	110,948	89,710	73,186	103,730	122,270
Rice, bran, meal, and polish.....	246,891	200,203	122,589	228,010	143,022	167,023
Roofing felt and paper.....	207,818	183,403	104,280	89,543	(1)	(1)
Root beer.....	358	455	834	1,014	2,018	4,661
Salt.....	190,376	99,066	70,296	83,264	67,316	55,833
Shoe findings.....	10,921	912	57,406	177,644	134,566	107,739
Silk:						
Manufactures of.....	620,572	466,510	412,415	301,758	244,678	252,608
Waste.....	9,806	30,814	19,968	9,750	9,138	53,851
Soap:						
Toilet and fancy.....	888,838	721,776	573,588	459,092	562,514	494,406
All other.....	1,781,393	1,778,157	1,879,180	1,171,846	1,006,666	1,270,618
Spermaceti and spermaceti wax.....	28,124	30,964	44,915	91,899	54,778	67,125
Spices.....	32,372	28,521	36,787	23,471	20,204	19,131
Spirits, wines, and malt liquors:						
Malt liquors—						
In bottles.....	932,372	700,432	1,082,982	1,109,203	1,043,517	1,945,059
In other coverings.....	80,436	84,087	95,758	90,769	79,508	194,157
Spirits, distilled—						
Alcohol—						
Wood.....	603,385	585,350	452,892	338,619	470,582	320,306
All other, including pure, neutral, or cologne spirits.....	223,664	112,291	23,510	220,453	97,633	59,277
Brandy.....	18,217	44,110	19,213	30,174	28,176	83,698
Rum.....	1,175,837	994,959	1,458,393	1,425,920	1,468,110	903,808
Whisky—						
Bourbon.....	246,115	254,693	203,137	638,061	687,909	764,800
Rye.....	207,606	217,551	223,480	275,717	251,583	121,241
All other.....	97,328	67,854	62,358	82,950	44,670	24,921
Wine—						
In bottles.....	28,242	33,136	24,624	42,980	43,013	49,927
In other coverings.....	355,215	403,557	290,552	407,345	461,560	575,065
Sponges.....	18,390	36,646	50,306	39,279	29,554	32,199
Starch.....	1,430,572	1,340,282	832,043	656,705	2,005,805	2,604,362
Stereotype and electrotype plates.....	41,838	26,957	37,419	37,780	45,000	48,877
Straw and palm leaf, manufactures of.....	502,132	471,392	480,569	308,559	412,068	402,861
Sugar, molasses, and confectionery:						
Molasses.....	591,879	592,288	492,200	416,470	291,063	434,585
Sirup.....	2,076,200	1,846,563	1,714,899	2,048,561	2,235,014	1,682,102
Sugar—						
Brown.....	969	3,427	3,545	14,089	0,056	11,292
Refined.....	745,639	528,616	358,537	292,716	437,523	1,004,135
Candy and confectionery.....	717,020	651,911	535,412	465,494	543,833	505,487
Tooth, artificial.....	7,004	7,913	4,715	3,492	3,736	86
Theatrical effects, etc.....	274,183	60,152	41,656	53,985	136,422	55,690
Tin:						
Scrap.....	20,702	30,853	6,611	7,796	40,914	44,716
Manufactures of.....	721,900	731,553	650,096	517,159	516,343	387,381
Tobacco manufactures:						
Cigars.....	59,653	36,545	46,962	34,632	53,174	74,623
Cigarettes.....	2,934,376	2,320,112	2,281,531	2,104,833	1,877,255	2,290,876
Plug.....	1,830,308	1,700,028	1,083,152	2,794,080	2,416,175	2,624,870
All other.....	865,866	986,034	1,182,151	735,208	745,999	1,019,772
Toys.....	500,038	308,067	281,591	282,817	280,546	216,512
Tripoli.....	44,193	32,990	10,039	13,401	4,740	8,107
Trunks, valises, and traveling bags.....	231,728	174,372	188,875	139,751	115,881	119,777
Varnish.....	791,578	726,585	607,475	607,685	611,459	620,104
Vegetables:						
Canned.....	580,048	719,580	597,759	560,612	528,914	603,288
All other, including pickles and sauces.....	929,742	785,076	745,697	667,761	544,764	490,542
Vessels, sold abroad—steamers and sailing.....	786,180	210,048	190,164	172,019	112,906	202,948
Vinegar.....	17,158	19,132	18,072	19,754	13,231	12,583
Vulcanized fiber.....	37,075	23,647	9,331	8,143	28,357	34,135
Wax, shoemakers'.....	(1)	8,382	5,961	6,285	0,048	13,539
White metal.....	3	8	(1)	(1)	351	206

(1) Not reported separately.



# EXPORTS AND IMPORTS.

ccecvii

TABLE CXXLVII.—VALUE OF PRODUCTS OF DOMESTIC MANUFACTURE EXPORTED: 1900 TO 1905—Continued.

	1905	1904	1903	1902	1901	1900
Wood, and manufactures of:						
Timber and unmanufactured wood—						
Sawed.....	\$7,294,168	\$8,472,355	\$7,462,111	\$5,225,003	\$6,370,680	\$5,763,390
Flown.....	913,654	881,557	787,082	1,030,687	802,528	785,305
Lumber—						
Boards, deals, and planks.....	24,483,214	28,603,355	20,965,328	16,978,322	20,106,242	17,731,696
Joists and scantling.....	704,305	876,062	647,920	472,384	572,704	550,495
Shingles.....	69,251	82,377	86,245	86,799	89,588	109,667
Shooks—						
Box.....	825,145	869,802	779,777	700,035	590,271	587,047
Other.....	1,278,972	795,595	820,248	798,894	882,438	728,753
Staves.....	3,613,635	4,032,344	4,740,680	3,830,432	3,757,048	4,337,418
Heading.....	148,042	170,874	134,383	123,376	137,961	78,146
All other.....	3,008,115	3,190,687	3,732,782	3,572,328	4,422,384	3,613,190
Manufactures of—						
Doors, sash, and blinds.....	853,350	1,433,037	1,727,387	920,688	990,688	1,132,510
Furniture, not elsewhere specified.....	4,430,944	4,555,411	4,454,309	4,125,933	3,951,498	4,191,036
Hogsheads and barrels, empty.....	188,996	215,532	175,020	127,003	117,442	167,855
Trimnings, moldings, and other house finishings.....	616,331	561,504	505,213	492,907	436,325	428,185
Woodenware.....	782,138	981,888	880,080	758,578	777,040	981,938
Wood pulp.....	473,585	593,474	445,228	740,103	1,051,867	468,403
All other.....	5,209,286	4,640,266	4,818,014	4,451,858	3,774,773	3,872,851
Wool manufactures:						
Carpets.....	64,641	50,921	57,979	86,771	105,156	115,052
Dress goods.....	15,572	7,829	6,442	7,074	8,239	24,381
Flannels and blankets.....	31,556	105,044	48,141	85,374	123,054	140,403
Wearing apparel.....	1,624,472	1,457,748	1,290,853	852,170	805,717	570,389
All other.....	248,813	366,396	318,713	478,059	500,667	450,077
Yeast.....	21,215	18,772	24,675	8,439	6,800	8,086
Zinc manufactures:						
Dross.....	895,133	645,311	674,262	369,811	164,140	224,210
Pigs, bars, plates, and sheets.....	1,153,356	185,905	186,192	328,164	870,229	1,584,702
All other.....	166,293	72,745	99,481	101,809	95,211	84,513
All other articles, manufactured.....	239,887	147,180	187,293	307,064	678,308	337,365

In 1900 wheat flour ranked first in value of exports, illuminating oil second, and copper ingots, bars, plates, and old copper third. During the intercensal period, however, the value of exports of illuminating oil underwent only a slight increase, and there was a considerable falling off in the value of exports of wheat flour, while exports of copper ingots, bars, and plates increased at such a rate as to place them for the year 1905, with respect to value, considerably in the lead of any of the manufactured products itemized in the table.

The falling off in exports of manufactured breadstuffs is very marked. Since 1900, with the unimportant exception of rye flour, every item composing this group suffered a loss. The value of exports of wheat flour decreased \$27,584,750, or 40.7 per cent, the greatest absolute decrease for any item shown in the table.

Exports of manufactures of cotton generally showed a very material growth during the five years. Uncolored cloth was particularly noticeable in this respect, increasing from \$13,229,443 to \$33,995,134. None of the products in this group underwent any decrease in value with the exception of those included in "all other," which suffered very slightly for the period shown.

In the iron and steel group, exclusive of the cruder products, such as pig iron, bar iron, etc., there were large increases in the value of exports in several cases, and where decreases are shown they are for the most part slight. Increases in the value of exports of cash registers, typewriting machines, and electrical machinery were particularly notable, the value of exports of the first named more than doubling and that of the last two classes nearly doubling. The most

marked falling off in the value of exports of any one class of machinery appears in metal working machinery, which decreased from \$7,193,390 to \$4,332,665. Exports of locomotives have been irregular, amounting in value to \$5,592,403 in 1900 and falling to \$3,219,778 in 1903, increasing again in 1904 to \$5,261,422, and in 1905 decreasing nearly to the figures for 1903.

Exports of leather, particularly upper leathers, have increased during the period shown by the table. Of the manufactures of leather, exports of boots and shoes, which have nearly doubled in the five years, show the greatest increase.

Exports of oils of all kinds form an important portion of the export trade of the United States. Of the mineral oils, illuminating is the most important from the standpoint of domestic exports, but there has been only a slight increase since 1900 in the exports of this commodity. Of the vegetable oils, cottonseed is by far the most important, but in the value of the exports of this oil also there has been but a slight increase since 1900.

In the group "wood, and manufactures of," lumber, such as boards, deals, and planks, figures most largely in the export trade, increasing in value from \$17,731,696 in 1900 to \$24,483,214 in 1905.

Of the products of industries of comparatively recent growth, exports of automobiles are of considerable interest. In 1900 and 1901 such exports were not of sufficient importance to warrant segregation in the reports of the Bureau of Statistics, but in the reports for the year 1902 exports of "automobiles, and parts of" appeared to the value of \$948,528; in two years this value had nearly doubled, and by 1905 it had reached \$2,481,243.

*Rank of the United States as an exporter of domestic manufactures.*—While the leading position of the United States as an exporter of domestic merchandise at the present day is due in a large part to the development of domestic manufactures, yet if the ranking depended upon products of manufactures alone, the United Kingdom would have an incontestable claim to first place and the German Empire would have an equally certain hold on second place. It is probable that in 1904 the value of exports of domestic manufactures from the United Kingdom amounted to at least 85 per cent of the value of exports of all kinds of domestic products, or about a billion and a quarter of dollars, while for the German Empire it would appear that at least 75 per cent—about nine hundred and thirty-two millions of dollars—of the total value of domestic exports were products of German mills and factories. Thus, notwithstanding that the position as the leading manufacturing nation has been conceded to the United States for several years, as an exporter of domestic manufactures the country can not claim a higher rank than third.

This has resulted logically from a home market whose rapidly expanding demands have in the past proved sufficient to absorb the products of domestic industry. Naturally the American manufacturer, in full possession of a domestic market far greater than that possessed by the manufacturer of the United Kingdom or of any of the continental countries, has been apathetic in his attitude toward foreign trade. This attitude, however, is rapidly changing. Manufacturers are beginning to realize that if the output of manufactures increases in the future in anywhere near the same ratio as in the past, the home market, notwithstanding its tremendous demands, will be outgrown, and therefore efforts must be made to secure a larger share of the trade of the world at large.

Never has the competition between the great industrial nations for the trade of the people of less favored nations been waged more fiercely than at the present time. Germany and England are reaching forward with the knowledge that much of their future prosperity and greatness depends upon their success in this direction. In this friendly commercial struggle the United States has resources, both agricultural and mineral, unequalled by either England or Germany. Moreover, the ingenuity of American inventors and the enterprise of domestic manufacturers have united to produce many articles possessing utility and constructive perfection far in advance of similar products of industry in other countries. Thus a demand for certain American manufactures has sprung up in many quarters of the globe, which originally resulted not so much from the energy of the manufacturers in seeking foreign markets as from the intrinsic value and supe-

rior usefulness of the American product. Particularly has this been true in the case of agricultural implements, typewriting machines, sewing machines, locomotives, cash registers, electrical machinery, all kinds of builders' hardware, saws and tools, and metal working, wood working, and shoe machinery, etc. Unlimited natural resources with a high degree of ingenuity, resourcefulness, and energy available for their best development and application to the uses of manufactures, if combined with adequate methods for entering and holding foreign markets, should soon give the United States a share in supplying the world's consumption of manufactured goods which will be more justly proportioned to its position as the greatest manufacturing nation than is at present the case.

*Imports.*—The reports on foreign commerce of the Bureau of Statistics of the Department of Commerce and Labor distinguish between general imports and imports entered for consumption. General imports include all goods imported, whether for immediate consumption or for warehouse, while imports entered for consumption embrace merchandise entered for immediate consumption or withdrawn from warehouse for consumption. In 1905 the value of general imports was \$1,117,513,071 and of imports for consumption, \$1,087,118,133. These values were the highest ever attained during a fiscal year and represent an increase over the total for 1896 of 43.3 per cent in the case of general imports, as also for imports for consumption, against an increase of 72.8 per cent in domestic exports for the same period.

The value of imports does not represent the cost to the first purchaser in the United States of the goods imported. The value of merchandise imported is the wholesale value of the goods and packages ready for shipment, as declared by the importer at the port of shipment, and it does not, therefore, include duties, freight charges, commissions for handling, etc. In 1905 the amount of \$258,426,294 was collected as duty, representing an average ad valorem rate of 23.77 per cent on free and dutiable imports. Therefore the value as declared at the port of origin, \$1,087,118,133, plus the duty, \$258,426,294, a total of \$1,345,544,427, represents more nearly than import values the actual cost to the consumer of the articles imported for consumption in 1905.

The progressive changes which have taken place in the nature of the merchandise imported during the past ten years show the effect of the recent great expansion of manufactures. During this period the rapid increase in imports of raw materials for use in manufactures stands in marked contrast to the moderate increase in imports of manufactures, particularly those ready for final consumption. Table CCXLVIII indicates the extent of these changes in imports from 1896 to 1905.

# EXPORTS AND IMPORTS.

cccix

TABLE CCXLVIII.—VALUE OF GENERAL IMPORTS: 1896 TO 1905.<sup>1</sup>

YEAR.	Aggregate value.	IMPORTS UNMANUFACTURED.					IMPORTS MANUFACTURED.				
		Total.		Foodstuffs in crude condition and food animals.	Crude materials for use in manufacturing.	Miscellaneous—animals not for food, plants, trees, etc.	Total.		Foodstuffs partly or wholly prepared.	Manufactures for further use in manufacturing.	Manufactures ready for consumption.
		Value.	Per cent of aggregate.				Value.	Per cent of aggregate.			
1905.....	\$1,117,513,071	\$541,956,622	48.5	\$146,130,903	\$389,160,658	\$6,665,061	\$575,556,440	51.5	\$145,355,839	\$177,827,900	\$252,372,660
1904.....	901,087,371	469,772,946	46.4	132,223,895	320,704,431	6,754,020	531,314,425	53.6	118,222,802	160,233,890	252,857,673
1903.....	1,025,719,237	455,590,583	44.4	119,202,674	330,491,084	5,896,825	570,128,654	55.6	110,620,623	195,750,847	267,757,184
1902.....	903,320,048	428,893,580	47.5	120,280,302	303,001,868	5,611,410	474,427,308	52.5	95,350,256	147,656,202	231,420,820
1901.....	823,172,165	364,549,007	44.3	110,385,208	248,006,751	6,157,048	458,623,158	55.7	125,540,654	127,576,624	205,505,580
1900.....	849,941,184	379,565,424	44.7	97,916,293	276,241,152	5,407,979	470,375,760	55.3	133,027,374	134,222,045	203,126,341
1899.....	607,148,480	312,220,810	44.8	98,933,256	208,566,061	4,730,863	384,018,679	55.2	123,448,135	91,953,914	169,510,630
1898.....	616,049,654	297,645,017	48.3	103,984,608	189,322,244	4,338,165	318,404,637	51.7	80,091,010	79,288,417	153,025,210
1897.....	764,730,412	320,151,137	43.0	128,379,785	190,159,371	4,611,981	435,579,275	57.0	129,244,951	88,490,406	217,843,918
1896.....	779,724,674	333,208,276	42.7	130,002,310	197,046,852	5,559,113	446,516,309	57.3	118,806,708	101,070,937	220,639,759

<sup>1</sup> Bureau of Statistics, Department of Commerce and Labor, Annual Review of Foreign Commerce, year ending June 30, 1906, page 42.

In 1905 the value of unmanufactured imports comprised 48.5 per cent of the aggregate value of general imports, while ten years previous this proportion was 42.7 per cent. The increasingly important position of importations of crude materials is due to the remarkable increase in the group "crude materials for use in manufacturing" and the relatively slow growth of the group "manufactures ready for consumption." In 1905 the value of crude materials imported for use in manufactures exceeded the value of manufactures imported ready for consumption by \$136,788,008, while in 1896 the latter group of imports exceeded the former by \$28,992,907. In this connection the percentages of increase shown in Table CCXLIX are significant.

TABLE CCXLIX.—Per cent of increase in value of general imports, by groups: 1896 to 1905.

GROUP.	Per cent of increase.
Aggregate.....	43.3
Imports unmanufactured.....	62.6
Foodstuffs in crude condition and food animals.....	12.4
Crude materials for use in manufacturing.....	95.9
Miscellaneous—animals not for food, plants, trees, etc.....	19.9
Imports manufactured.....	28.9
Foodstuffs partly or wholly prepared.....	22.3
Manufactures for further use in manufacturing.....	75.9
Manufactures ready for consumption.....	11.4

Unmanufactured imports increased 62.6 per cent against an increase of only 28.9 per cent for manufactured imports. For the six groups the greatest increase was made by "crude materials for use in manufacturing" and the second group in this particular was "manufactures for further use in manufacturing." The least progress for the ten years was made by the group "manufactures ready for consumption," which increased only 11.4 per cent. Thus the greatest increases were recorded for the two groups which owe their existence to domestic manufactures.

Under unmanufactured imports the group "crude

materials for use in manufacturing" does not include all raw materials imported for manufacturing. In 1905 at least 66 per cent of the group "foodstuffs in crude condition and food animals" was made up of raw materials, such as green coffee, crude cocoa, etc., which were for the most part subjected to one or more manufacturing processes before they were offered for consumption. Thus in 1905 approximately 90 per cent of the value of unmanufactured imports was imported as materials for manufacturing. Therefore the increase during the decade in the value of unmanufactured imports is directly attributable to the development in manufacturing during the same period. The expansion of home industries, then, has resulted in a great increase in the consumption of imported raw materials, and it is natural that because of this growth the demands of the home market for manufactures have been more nearly satisfied in every line by the manufacturers of the country than ever before. Apart from the effect of the tariff, which of course acts as a continual check upon imports of manufactures, it is certain that our home industries are becoming more and more able to compete successfully with foreign goods, and as a result are steadily supplanting them in the home market. Thus the same cause which gave an impetus to the increase in unmanufactured imports has had the effect of retarding the increase in manufactured imports, particularly in the group of "manufactures ready for consumption."

A notable feature in the statistics of imports for the past ten years has been the remarkable increases in tropical and subtropical products imported raw for use in manufactures. Many such products are not indigenous to the soil of the United States, and the manufacturers are dependent upon imports for their supplies. Extraordinary increases in such products are largely responsible for the increase in the group "crude materials for use in manufacturing" shown in Table CCXLVIII. Leading imports of raw materials of this description which showed exceptional increases from 1896 to 1905 are presented in Table CCL.

TABLE CCL.—*Leading crude products of tropical or subtropical growth imported for use in manufactures, with percentages of increase: 1905 and 1896.*

PRODUCT.	1905	1896	Per cent of increase.
Silk, unmanufactured.....	\$61,040,053	\$26,763,428	128.1
India rubber and gutta-percha.....	50,729,873	16,781,533	202.3
Fibers, unmanufactured flax, hemp, istle, jute, manilla, and sisal.....	38,118,071	12,870,694	196.2
Gums—arabic, camphor, copal, gambier, shellac, etc.....	10,630,481	6,922,111	53.6
Cocoa, or cacao, crude and leaves and shells of.....	8,577,649	2,387,078	259.3

For three of the products in the table—raw silk, india rubber, and cocoa—which are not produced in the United States, the increases are fully explained by the fact that since 1890 the value of the products of the rubber and elastic industry has increased 336 per cent, the value of the products of the chocolate and cocoa industry 340 per cent, and the value of manufacture of silk 152 per cent. The imports of fibers, chiefly tropical, increased \$25,247,377, or 196.2 per cent, and since 1890 the manufactures of one of this group of fibers, jute, increased nearly eightfold.

*Summary.*—In 1896 the value of exports and imports of manufactures was nearly the same, but ten years later the value of manufactures exported exceeded the value of those imported by \$318,933,805. The most significant change of this kind took place in the value of manufactures exported and imported ready for consumption. In 1896 exports of the commodities in this

group were valued at \$181,789,157, or \$44,850,602 less than the value of imports, but in 1905 this condition was reversed, and exports exceeded imports of manufactures ready for consumption by \$149,691,380.

In 1905 exports of crude materials of all kinds were valued at \$55,297,765 more than imports of the same class, but exports of manufactured merchandise exceeded imports of manufactured goods by \$318,933,805. Of the total excess of the value of domestic exports over general imports, therefore, about 90 per cent results from the exports of manufactured merchandise.

Estimating that 90 per cent of the value of unmanufactured imports and 46 per cent of the manufactured imports, including imports of sugar for refining purposes, were imported as materials for manufacturing in 1905, the aggregate value of imports for this purpose would amount to about \$753,000,000, or in the neighborhood of 67 per cent of the aggregate value of the general imports for the year. The value of exports of domestic manufactures for 1905 was \$894,490,254, or 60 per cent of the total value of domestic exports of merchandise of all kinds. In the same year the aggregate value of all general imports and domestic exports was \$2,609,257,712, and the aggregate of the values, as estimated above, of imports of materials of all kinds for manufactures and exports of domestic manufactures was approximately \$1,647,490,000. Therefore about 63 per cent of the foreign commerce of the United States, exclusive of foreign exports, was due directly to the manufactures of the country.

## CHAPTER XV.

### THE RANK OF THE UNITED STATES AS A MANUFACTURING NATION.<sup>1</sup>

None of the great industrial nations has followed the example of the United States in attempting to measure at regular intervals the value of the manufactured products of the country, so that it is difficult to furnish figures that will indicate, by industries, the relative positions of the competing nations. It is possible, however, to obtain information which, although not official, is sufficiently reliable to supply the deficiency to some extent. Estimates published by eminent statisticians and the figures appearing annually in certain commercial papers are the principal sources of information.

In respect to the value of manufactures produced annually the English statistician, Michael G. Mulhall, assigned the United States to fourth place in 1860 and conceded that it was first in 1894.<sup>2</sup> A more recent authority, however, has expressed the belief that this lead was probably gained as early as 1885.<sup>3</sup> According to the same authorities it is probable that the United Kingdom can claim second place, with Germany third, and France fourth. Germany has made greater relative progress during the past twenty-five years than either England or France,<sup>4</sup> and now the products of German mills have supplanted English wares in many markets which Great Britain had previously monopolized.<sup>5</sup>

<sup>1</sup> This chapter was prepared by Francis C. Wilson of the division of manufactures.

<sup>2</sup> Michael G. Mulhall, *Industry and Wealth of Nations*: 1896.

<sup>3</sup> P. Leroy-Beaulieu, *Les Etats-Unis au XX Siècle*, Chap. V, page 195: Paris, 1904.

<sup>4</sup> *Ibid.*, and measured by the exports of the three countries during the past twenty years.

However, Germany has probably not yet reached the United Kingdom in the value of industrial production.

According to the English Board of Trade the exports of manufactured goods of the United Kingdom constituted from 17 to 20 per cent of the total industrial output of 1902,<sup>6</sup> and upon this basis the value of manufactures of the United Kingdom for that year may be reckoned at about \$4,588,630,000, or over three billion dollars less than the net value of the manufactured products, exclusive of hand trades, of the United States in 1900, according to the census of manufactures. These figures give some indication of the supremacy that the United States has obtained in the industrial world.

*Iron and steel.*—The manufacture of iron and steel has long been considered as the most significant indication of national progress and prosperity. The ore when reduced to pig iron becomes one of the most powerful instruments for industrial production that a country can possess. In no industry has the United States made more remarkable progress, and in none is the present ascendancy of America more certain. The figures in Table CCLI show the record of the principal producing countries during the past century.

<sup>5</sup> Special Consular Reports, vol. 33, 1904, page 149. The Basis of German Industrial Progress. Report of Chamberlain Tariff Commission, vol. 2, part 1, paragraph 153.

<sup>6</sup> Gilbert Slater, "The Free Trade View of Tariff Reform," in *Hazell's Annual*, page 230: 1904.

TABLE CCLI.—QUANTITY OF PIG IRON PRODUCED IN THE WORLD: 1903, 1895, 1850, AND 1800.<sup>1</sup>

COUNTRY.	1903		1895		1850		1800	
	Thousands of tons.	Per cent of total.	Thousands of tons.	Per cent of total.	Thousands of tons.	Per cent of total.	Thousands of tons.	Per cent of total.
Total.....	46,381	100.0	29,300	100.0	4,422	100.0	460	100.0
United States.....	18,009	38.8	9,450	32.2	560	12.7	40	8.7
Great Britain.....	8,935	19.3	8,020	27.3	2,250	50.9	190	41.3
Germany.....	10,085	21.8	5,790	19.8	402	9.1	40	8.7
France.....	2,840	6.1	2,010	7.0	570	12.9	60	13.0
Other countries.....	6,512	14.0	4,030	13.7	640	14.4	130	28.3

<sup>1</sup> Data for 1903 taken from Bulletin of American Iron and Steel Association, Sept. 15, 1905. Remainder of data from Mulhall's Dictionary of Statistics (1899).

It is impossible to present a more conclusive illustration than that contained in the above table of the rapid progress made by the civilized world in the utilization of iron for machinery and other industrial purposes. During the first half of the nineteenth century the total production of pig iron increased from 460,000 tons to 4,422,000 tons, or nearly ninefold. The fact that Great Britain produced 41.3 per cent of the total production in 1800 and 50.9 per cent in 1850 is indicative

of the lead England had taken in the manufacture and utilization of machinery. The relative increase, however, was greater for the United States than for any of the competing nations, and the thirteenfold gain in the production of pig iron during a half century, which was essentially a formative period in the history of the Republic, gave promise of still more phenomenal progress in the following fifty years.

It has been estimated that in 1740, 26,000 tons of pig

iron were produced in France, 20,000 in Great Britain, and 18,000 in Germany;<sup>1</sup> but it is shown by the table that in 1800 the position of the leaders was reversed, while Germany and the United States were tied for third place. Fifty years later the United Kingdom had increased its production to 50.9 per cent of the total, France barely holding second place with 12.9 per cent, the United States following closely with 12.7 per cent.

The period from 1850 to 1900 witnessed great advances in industrial progress in both Europe and America. The rapid increase in the use of steampower and the application of machinery to practically every industry made iron and steel essential to the industrial growth of the nations. Those countries which had great undeveloped resources have forged to the front, until now, aided by immense deposits of iron ore and coal, the United States and Germany lead the world in the production of iron and steel.

In 1895 the United States produced 32.2 per cent of the total output of pig iron, while England produced only 27.3 per cent, and Germany 19.8 per cent; but in 1903 the United States produced 38.8 per cent, Germany 21.8 per cent, and Great Britain 19.3 per cent of the total output.

The superiority of steel over iron for nearly all the purposes to which the latter is applied has led to successful inventions during the past fifty years for cheapening and improving the processes for converting pig iron into steel. The result has been an immense increase in the production of steel and a vast expansion of its field of usefulness the world over. Industrially, steel forms the essential basis of the mechanism upon which the highly developed industry of to-day depends. Thus the quantity of pig iron converted into steel is a good indication of the industrial progress of any nation.

Table CCLII shows, since 1885, the production of the principal countries in thousands of tons.

TABLE CCLII.—Quantity of pig iron and steel produced in the world: 1903, 1895, and 1885.<sup>1</sup>

[Thousands of tons.]

COUNTRY.	1903		1895		1885	
	Pig iron.	Steel.	Pig iron.	Steel.	Pig iron.	Steel.
Total.....	46,381	35,885	29,300	14,600	19,340	6,210
United States....	18,009	14,534	9,450	6,110	4,040	1,710
Great Britain....	8,935	75,134	8,020	3,880	7,420	1,920
Germany.....	10,085	8,801	5,790	2,160	3,690	1,140
France.....	2,840	1,885	2,010	810	1,630	530
Other countries...	6,512	5,531	4,030	1,640	2,560	910

<sup>1</sup> Data for 1903 taken from the Bulletin of American Iron and Steel Association, September 15, 1905. Remainder of data from Mulhall's Dictionary of Statistics (1899).

<sup>2</sup> Does not include direct steel castings.

From 1885 to 1895 the total production of steel more than doubled, and from 1885 to 1903 it increased over fivefold. In 1885, 32.1 per cent of the total production

of pig iron was converted into steel, and in 1903, 77.4 per cent ultimately became steel. In 1885 Great Britain was first in the production of steel with 1,920,000 tons, or 31 per cent of the total production, but this represented a conversion of not quite 26 per cent of the pig iron produced by the nation; the United States was second with 1,710,000 tons, or 27.6 per cent of the total output, and this represented the conversion of 42.3 per cent of the tonnage of pig iron for the nation; Germany came next in production with 1,140,000 tons, or 18.4 per cent of the total output of steel, and 30.9 per cent of the pig iron output of the nation.

By 1895 a radical change had occurred in the position of the leaders, the United States contributing 41.8 per cent, Great Britain 26.6 per cent, and Germany about 14.8 per cent of the entire production of steel.

In 1903 there were other significant changes. The United States produced 40.5 per cent of the output of steel, Germany 24.5 per cent, and England only 14.3 per cent. Germany, by converting 87 per cent of the pig iron production into steel, led in this regard, with the United States next with 80.7 per cent. In 1903, as compared with 1895, the relative increase in the production of steel was greater for Germany than for the United States.

*Textiles.*—The greatest expansion of the textile industry has always accompanied industrial progressiveness. It is natural, therefore, that Great Britain, the United States, Germany, and France should lead in the production of textile fabrics. Mechanism was first applied to the manufacture of textiles in England during the last half of the eighteenth century. The advantage of this early start, the development of the factory system, and the maritime supremacy of Great Britain combined to command the markets of the world for English textiles for some time after the opening of the nineteenth century. The United Kingdom is still the greatest producer of textiles; but in the case of many markets the English manufacturers do not have the undisputed control they possessed during the first half of the nineteenth century, for both the United States and Germany are active and often successful competitors.

From the standpoint of the number of persons employed and the amount paid in wages, it is probable that the textile industry is of greater economic importance than any other factory industry in the above countries. England is dependent largely upon the cotton industry, the products of which annually constitute about one-fourth of the value of the total exports leaving British ports, exclusive of bullion and coin, and France is dependent to a great extent upon the silk industry, the products of which from the standpoint of value have been for many years first on the list of the exports of the country.

The following statement shows by countries the number of wage-earners employed in textile factories:

<sup>1</sup> Brooks Adams, America's Economic Supremacy, page 3.

COUNTRY.	Year.	Number of wage-earners.
United States <sup>1</sup> .....	1905	862,732
Great Britain <sup>2</sup> .....	1901	1,029,353
Germany <sup>3</sup> .....	1903	802,452
France <sup>4</sup> .....	1903	634,378

<sup>1</sup> Bureau of the Census, Census of Manufactures, 1905. These figures represent the greatest number employed. The average number employed during the census year was 763,375.

<sup>2</sup> Tenth Abstract of Labor Statistics for United Kingdom, 1904, page 214.

<sup>3</sup> Statistical Yearbook of German Empire, 1905, page 38.

<sup>4</sup> Statistical Yearbook of France, 1904, page 126.

It appears from the report of the factory inspectors of Great Britain that the textile industry supports about one-fourth of all the wage-earners employed in English factories.<sup>1</sup> In no other country, with the possible exception of France,<sup>2</sup> is there so large a proportion of factory employees dependent upon one industry. It is difficult to make close comparisons because of the difference in the laws governing the collection of such information in the several countries, but it is probable that in Germany<sup>3</sup> about one-fifth of the factory employees are employed in textile factories, and in the United States<sup>4</sup> about one-seventh.

The table shows that Great Britain employed by far the greatest number of wage-earners in the manufacture of textiles; the United States and Germany rank close together in this respect, notwithstanding the fact that the former country is conceded to lead the latter in textile production. This seeming inconsistency is explained by the different methods applied to production and the kind of goods produced in these countries. In the United States the concentration of wage-earners in factories is far greater than in either Germany or France; and such concentration makes possible the practice of economies which are not practicable when labor is scattered through many small factories. The following statement illustrates this characteristic difference:

COUNTRY.	Year.	Number of establishments.	Number of wage-earners.	Average number per establishment.
United States <sup>1</sup> .....	1905	4,876	862,732	177
Germany <sup>2</sup> .....	1903	13,550	802,452	59
France <sup>3</sup> .....	1903	15,302	634,378	42

<sup>1</sup> Bureau of the Census, Census of Manufactures, 1905.

<sup>2</sup> Statistical Yearbook of German Empire, 1905, page 38.

<sup>3</sup> Statistical Yearbook of France, 1904, page 126.

In textile production in general the productivity per wage-earner is greater in the United States than in Germany and France. This would result naturally from the fact that the ascendancy of the United States is due largely to the cotton industry, in which, more than in any other branch of textiles, machinery has supplanted labor. In France the production of

<sup>1</sup> Tenth Abstract of Labor Statistics for United Kingdom, 1904, page 214.

<sup>2</sup> Statistical Yearbook of France, 1904, page 126.

<sup>3</sup> Statistical Yearbook of German Empire, 1905, pages 38 and 39.

<sup>4</sup> Bureau of the Census, Census of Manufactures, 1905.

silk is still dependent to a great extent upon hand looms. The product of the hand looms of Lyon remain unequalled for fineness of texture and beauty of pattern. In America, on the other hand, high-speed power looms weave all the silk dress goods produced and highly developed machinery is applied to every branch of the silk industry.

The manufacture of cotton goods is the most important branch of the textile industry. The number of spindles and the amount of cotton consumed are the standards by which the positions of the competing nations are judged.

Table CCLIII presents the statistics of cotton spindles and of the mill consumption of cotton by countries, 1905-6.

TABLE CCLIII.—World's cotton spindles and mill consumption, by countries: 1905-6.<sup>1</sup>

[500-pound bales.]

COUNTRY.	Cotton spindles (number).	Mill consumption (bales).
Total.....	120,090,595	17,879,137
United States:		
Cotton growing states <sup>2</sup> .....	8,994,868	2,373,677
All other states.....	16,255,228	2,535,802
Europe:		
United Kingdom.....	48,826,144	3,865,000
Germany.....	9,730,209	1,755,000
Russia.....	7,000,000	1,000,000
France.....	6,702,800	920,000
Austria.....	3,621,220	675,000
Italy.....	3,500,000	840,000
Spain.....	1,800,000	320,000
Switzerland.....	1,462,752	95,000
Belgium.....	1,122,000	190,000
Portugal.....	350,000	60,000
All other Europe.....	1,115,000	200,000
British India.....	5,250,000	1,520,000
Japan.....	1,403,740	871,546
China.....	619,648	194,112
Brazil.....	733,890	135,000
Mexico.....	628,096	150,000
Canada.....	775,000	119,000
Other countries.....	200,000	60,000

<sup>1</sup> The statistics for the United States were collected by this Bureau. Those for other countries have been compiled from a number of authorities, among them being the International Federation of Master Cotton Spinners' and Manufacturers' Associations, Manchester; the Financial and Commercial Chronicle, New York; Cotton Facts, Lyon & Co., Bombay; and Mitsui Bussan Kaisha, Osaka.

The table discloses at a glance the commanding lead which Great Britain and the United States have obtained over all competitors. The 23,576,048 spindles which separate the two leaders indicate the preponderance of Great Britain in the industry. This fact is not altered by the difference in favor of the United States in the consumption of cotton. English manufacturers have for many years devoted their attention to the production of the finer counts of yarn and lighter grades of goods, whereas in America, especially in the Southern states, coarser yarns and heavier cloths are the rule.

The past fifteen years have witnessed a phenomenal growth in the cotton industry in the United States, which is indicated fairly by the increase in the number of spindles. Although the industry has progressed in Great Britain, the increase has been very slow compared with that of the United States, as shown by the following statement:



COUNTRY.	SPINDLES.		Per cent of increase.
	1906	1890	
United States.....	<sup>1</sup> 25,250,096	<sup>2</sup> 14,384,180	75.5
Great Britain.....	<sup>3</sup> 48,826,144	<sup>4</sup> 40,511,934	20.5

<sup>1</sup> Bureau of the Census, Bulletin 63, Tables 11 and 15.

<sup>2</sup> Bureau of the Census, Bulletin 63, Table 11.

<sup>3</sup> Bureau of the Census, Bulletin 63, Table 15.

<sup>4</sup> Tenth Abstract of Labor Statistics for United Kingdom (1902-1904), page 212.

Not only was the percentage of increase far greater during the decade and a half in the United States than in Great Britain, but the actual gain in spindles was about two and a half millions more.

Next in importance to the cotton industry comes the woolen industry, but the data available for use in determining the position of the nations competing in the manufacture of woolen textiles is not so conclusive as in the former industry. For the sake of comparison it is customary to rank the countries according to the amount of wool retained for consumption. However, the wide difference between the value of wool used in the manufacture of carpets and of that used in making cloth goods causes a ranking based upon the weight of wool consumed to be open to well-founded objection.

According to the special report on textiles prepared for the census of 1900, Great Britain ranked first in the quantity of wool retained for consumption, France second, and the United States, Germany, and Austria were on a fairly even footing. Figures for France, Germany, and Austria are not available for 1904, but in the following tabular statement the consumption of wool in the textile factories of the United States is compared with the wool retained for consumption in Great Britain for the years 1900 and 1904:

COUNTRY.	THOUSANDS OF POUNDS.	
	1904	1900
United States <sup>1</sup> .....	501,468	412,745
Great Britain <sup>2</sup> .....	469,000	528,600

<sup>1</sup> Bureau of the Census, Census of Manufactures, 1905 and 1900—Wool consumption in textile mills.

<sup>2</sup> The Statesman's Yearbook, 1906 and 1905.

In 1904 as compared with 1900 the consumption of wool had increased in the United States, while in Great Britain considerable decrease had occurred in the quantity retained for consumption. From the fact that there has been a notable decrease in the total supply of wool since 1900, specially marked in the clip of Australasian wool, upon which Great Britain and the continent are to a considerable degree dependent for their supply, it is reasonable to suppose that the industry has not expanded to any great extent in either France or Germany. From these facts the conclusion may be drawn that the United States is now a close competitor of Great Britain and France, instead of holding, as in 1900, a doubtful tenure on third place.

In the manufacture of silk and silk fabrics the United States and France led in 1900.<sup>1</sup> The value of the product was estimated at \$122,000,000 for the latter country and \$92,000,000 for the former. However, if the value of imported Japanese and Chinese foulards printed at Lyon and included in the total for France should be deducted, the value of the manufactures of silk for the nation would be reduced by approximately \$4,000,000. It would seem doubtful if the output of France has increased appreciably since 1900,<sup>2</sup> whereas the United States census of manufactures for 1905, shows an increase of 25 per cent over 1900 in the value of silk manufactures in the United States. This remarkable increase has materially cut down the lead which France had in 1900, and at present it would seem that the two countries are on a nearly even footing.

The manufacture of textiles from flax, hemp, and jute is not comparable in importance with the other branches of the textile industry in the United States.<sup>3</sup> The gross value of all the products manufactured from these fibers, as reported by the census of 1900, was not one-half the gross value of the manufactures of silk. While linen fabrics are manufactured to a greater extent in the United Kingdom, France, and Germany than in America, the comparative unimportance of the industry is shown by the fact that there are probably not more than two and a half million flax-spinning spindles in Great Britain and on the continent together.<sup>4</sup> The other products of the manufacture of flax, hemp, and jute contain the fibers in such a variety of forms and quantities that there is no measure by which the nations may be ranked. However, the value of the manufactures of these fibers is not sufficient to alter the position of the great textile producing nations, as determined by the value of the products of the more important textiles.

While it is not possible to rank the countries in every branch of the textile industry, in the most important, namely, the manufacture of cotton, the positions are so clearly marked as to render the task of ranking the nations for the entire industry comparatively simple. It is certain that the great advantage of an extraordinary lead in the manufacture of cotton gives Great Britain an undeniable position at the head of the textile producing nations; and a like advantage over every other rival in the same industry renders equally certain the position of the United States as the second nation. Between Germany and France, it seems prob-

<sup>1</sup> International Universal Exposition at Paris. Report of United States Commissioner Peck; Report on Silk Fabrics, contributed by Franklin Allen, juror of the United States in the silk section, page 565. Government Printing Office, 1901.

<sup>2</sup> Statistical Yearbook of France for 1900 and 1904, Exports of Silk Manufactures for 1899, 278.3 million francs; for 1903, 293.4 million francs. P. Leroy-Beaulieu, Les Etats-Unis au XX Siècle, page 356.

<sup>3</sup> Twelfth Census, Manufactures, Report on Textiles, page 237.

<sup>4</sup> The Linen Industry, by Sir R. Lloyd Patterson, in British Industries under Free Trade, edited by Harold Cox.



able that the cotton industry is also the deciding factor; for, while France may lead Germany in the manufacture of woollen goods, and does so in the manufacture of silk goods, the margin in both industries is not large enough to overcome the advantage which Germany has in the manufacture of cotton. Germany, therefore, is entitled to third place, with France fourth.

*Food preparations.*—In the manufacture of food preparations the United States has attained a lead which is the natural result of immense advantages in the production of raw materials. Widely diversified agricultural products and every natural facility for the raising of live stock have enabled the United States not only to produce food preparations sufficient for the needs of a numerous and growing population, but also to contribute largely toward the food supply of Europe and other parts of the world.

The extent to which the aggregation of industries producing food products swells the total for all industries and helps to place the United States far beyond the reach of all competitors with respect to the value of industrial products is indicated by the figures for the present census of manufactures. The industrial group of food and kindred products showed a net value of \$2,176,489,626, which constituted 22.1 per cent of the net value of all products. However, the economic value of this group from the standpoint of manufactures can not be measured by the value of its products, since the report shows that while it ranked first in net value of products, it stood sixth among the fourteen great groups when measured by the number of wage-earners employed.

The slaughtering and meat packing branch of the group has had an enormous growth in the past twenty-five years, and in 1905 showed products with a net value of \$791,223,872, or about \$300,000,000 more than the estimated value of the average yearly production of cotton manufactures of every description in the United Kingdom.<sup>1</sup> The industry has no counterpart either in the United Kingdom or on the continent, where slaughtering is for the most part still a neighborhood industry and meat packing as an industry is of slight importance.

Flour and grist mill products swell the total value of the manufacture of food preparations by over a half billion dollars yearly, and, after the slaughtering and meat packing industry, contributed, in 1905, a larger sum than any other industry to the net value of all products.

*Leather products.*—Dependent largely upon the slaughtering industry for raw material, the manufacture of leather and leather products in the United States has expanded with it and has attained a magnitude unequalled by the industry in any other nation. It has been estimated that the United States produces

over one-fifth of the total output of hides and manufactures over one-fourth of the total production of leather.<sup>2</sup> No other nation produces one-half as much leather as the United States, although Argentina contributes very largely to the supply of hides. Some idea of the immensity of the production of hides in this country may be obtained from the following statement:

*Slaughtering of cattle at seven points in the United States: 1904.<sup>1</sup>*

CITY.	Number.
Total.....	4,576,264
Chicago, Ill.....	1,932,853
Kansas City, Kans.....	1,012,665
Omaha, Nebr.....	642,277
Sioux City, Iowa.....	68,913
St. Paul, Minn.....	105,963
Denver, Colo.....	47,162
St. Louis, Mo.....	706,431

<sup>1</sup> Hide and Leather, January 21, 1905.

For the sake of comparison, the following statement is instructive:

*The exports of hides from South America to the largest European markets: 1904.<sup>1</sup>*

CITY.	Number.
Total.....	1,448,883
Antwerp.....	1,053,788
Havre.....	369,429
Liverpool.....	65,666

<sup>1</sup> Hide and Leather, January 21, 1905.

The leading sources of cattle hides for the European markets are the South American countries, yet Chicago produced nearly a half million more hides for the tanners of America than South America exported to the three leading receiving ports of Europe.

Among the many necessary articles derived from leather, boots and shoes rank as the most important. The manufacturers of the United States have transformed this industry from a hand trade to a highly developed factory industry,<sup>3</sup> and American boot and shoe machinery is now the standard in Europe. The output of the factories in the United States has been hardly more than enough to satisfy home consumption until recent years, when, as a result of the increased output, the manufacturers have turned their attention to foreign markets. The result has been a rapidly growing demand for the product in Europe, in spite of sharp competition from English and other European manufacturers.

The following statement<sup>4</sup> indicates the popularity which American shoes have gained abroad during a decade:

<sup>2</sup> Mulhall's Dictionary of Statistics.

<sup>3</sup> John T. Day, *The Boot and Shoe Trade*, British Industries under Free Trade, page 237.

<sup>4</sup> Bureau of Statistics, Treasury Department, *Statistical Abstracts*, 1894 and 1904.

<sup>1</sup> The Cotton Industry, by Elijah Helm, in *British Industries under Free Trade*, edited by Harold Cox.

	1904	1894
Pairs.....	4,642,531	647,318
Value.....	\$7,238,940	\$777,354

The exporting of boots and shoes from the United States had no more than commenced in 1894, but during the ten years following it increased about sixfold in quantity and nearly eightfold in value.

Thus, out of the four leading divisions of industry, the products of which are essential to the comfort and advancement of civilized people at the present day, the United States leads in three, namely, the production of iron and steel, of leather and leather products, and of food preparations, and is second in the production of textiles.

The supremacy of the United States as a manufacturing nation may be attributed to several causes, but none has had a more stimulating effect than the possession of a home market, untrammelled by local restrictions and protected from foreign competitors, whose growth until recently has more than kept pace with the remarkable industrial progress of the nation. At the present day American manufacturers practically supply the needs of a population double that of the United Kingdom, more than double that of France, and nearly a third again as numerous as the population of the German Empire, and in addi-

tion, export to foreign markets domestic manufactures valued at more than three-quarters of a billion dollars.

But to measure the consuming power of the home markets of these countries according to population alone does not present a complete picture. It is the material and social progress of the nation which furnishes the significant background and brings out most clearly the purchasing power of the people. With respect to the diffusion of wealth and education among the great mass of the people, none of the great industrial nations can point to greater progress than the United States. To such an extent have the resources of the United States been developed and to such perfection have the facilities for intercourse between the different sections of the Union been brought, that the internal commerce of the country during 1903 equaled the entire international commerce of the world.<sup>1</sup> Recently it has been authoritatively stated that the home market of the United States is ten times as great as that of Great Britain.<sup>2</sup> Such statements are especially significant in the bearing they have upon the present position which the nation has attained in the manufacturing world.

<sup>1</sup> Article by Mr. O. P. Austin, chief of the Bureau of Statistics, Department of Commerce and Labor, cited in Bulletin of National Association of Wool Manufacturers, September, 1904, page 253.

<sup>2</sup> Testimony rendered before the Chamberlain Tariff Commission, cited in Bulletin of American Association of Wool Manufacturers, December, 1904, page 316.

## CHAPTER XVI.

### INDUSTRIAL CENSUSES OF FOREIGN COUNTRIES.

Although no other nation appears to have taken an industrial census which is comparable in every respect with the census of manufactures of the United States, the laws in a number of countries provide for censuses of production and for the collection of certain information concerning industrial pursuits in connection with the census of population. As the provisions of law and methods followed in their execution are of interest in connection with a study of the census and Census methods of this country, they are made the subject of a separate chapter in this report.

#### GERMANY.<sup>1</sup>

*Early industrial censuses.*—The first industrial census<sup>2</sup> embracing Germany in its present extent, was taken on December 1, 1875, nearly five years after the foundation of the Empire, and was connected with the population census of that year.

It covered horticulture and commercial gardening, fisheries, mines, foundries, salt works, manufactures, including the building industry, commerce, transportation, and the business of furnishing lodging, food, and drink. It did not include (a) operations of an industrial character under the administration of the army and navy; (b) the operation of the railway, postal, and telegraph systems; (c) the insurance business; (d) medical institutions, the business of physicians and their assisting personnel, and midwives, and the burial of the dead; (e) musical and theatrical pursuits and shows of any kind; (f) itinerant business; (g) industrial operations for the employment of inmates of reformatory and penal institutions; (h) concerns devoted exclusively to supplying the needs of the household of the manager. But while the workshops connected with the railways, posts, and telegraphs were not included in the general census, they were covered by a separate investigation, the data being collected by the respective administrations by means of an inquiry schedule conforming to the general industrial schedule.

A distinction was made between industrial concerns with five operatives or less and those with more than five. In the case of the former, the questions concerning the number of assistants and apprentices, by sex,

the number of looms, stocking frames, sewing machines, and motor engines were generally included in the household schedule or the corresponding general schedule of the population census or were otherwise stated. The concerns having more than five operatives were investigated by means of special industrial schedules which called for the following information: Location; name of the manager (active manager), lessee, administrator (and firm name); legal form of organization; nature of the industry; the secondary industries; number of managers, by sex; number of persons engaged besides managers, by sex and age; the number, kind, and, as far as possible, power of the motor engines; and, where certain machines were characteristic of the industry, their number and kind.

The unit for the purpose of the census was the independent industrial concern—that is, every industrial concern operated independently by a person as owner, lessee, or manager; and, in the shipping industry, the concern of the master or shipowner. Thus the census unit included the concern of every individual person working either in the house of the customer or in his own home or workshop on the account of outside parties. Each of the industrial concerns of the same owner, different in kind, whether locally united or separated, and each of the concerns, similar in kind, but locally separated and independently operated, was separately enumerated. An industrial concern belonging to several owners but under one management was counted but once.

The German Imperial Statistical Office is of the opinion that, as the questions at this census were not precise enough and provisions for preventing duplication were wanting, the accuracy of the results was not equal to that secured by the following census.

This census was taken on June 5, 1882, in connection with a general occupation census. It was somewhat more comprehensive than the census of 1875; but the methods were much the same. The nature of the industrial activity was more accurately investigated; and the examination of the industrial conditions in detail was extended to all trade and manufacturing enterprises except those carried on by an individual owner working alone. Household and industrial schedules were again made use of. The former, which was the regular schedule for the occupation census, was used for industrial concerns without co-propriators, assistants, or motors; the latter for those with

<sup>1</sup>This and the succeeding chapters on France, Austria, Belgium, and Hungary are synopses of reports prepared by Dr. R. R. Kuczynski.

<sup>2</sup>Statistik des Deutschen Reiches, Neue Folge, Band 6, 7; cf. Band 1.

co-proprietors, assistants, or motors. Since this census was substantially the same in method and scope as the succeeding census of 1895, its details need not be dwelt upon here, the principal points of difference will be noted in describing the later census.<sup>1</sup>

#### THE CENSUS OF 1895.

*Origin.*—In his message of November 17, 1881, Emperor William I. had designated the taking of a census of occupations and industries as a prerequisite to the social legislation inaugurated by that message. The census of 1882 was taken for this purpose. It was followed by the law of June 15, 1883, dealing with the insurance of workmen against sickness, the law of July 6, 1884, dealing with insurance against accidents, and the law of June 22, 1889, dealing with insurance against infirmity and old age. But it soon became evident that this census alone could not provide a permanent basis for legislation. To be sure, the data furnished regularly by the trade associations gave valuable information about changes which occurred in the industrial enterprises subject to the laws regarding accident insurance; but this did not embrace all industries and did not cover many important details. At the same time, these statistics, like the statistics of steam boilers and the special investigations of the manufacturing development in different cities, made it evident that important industrial changes were in progress and early in the nineties, parliament, the press, scientific investigators, and various branches of the administration, particularly the Imperial Statistical Office and the

<sup>1</sup> Printed sources used:

Verhandlungen des Reichstages, 1894-95.  
Statistik des Deutschen Reiches, Neue Folge, Bandseite 101-119, Berlin, 1897-1899, especially 111, 119.  
Preussische Statistik, Band 142, Berlin, 1898.  
Geschichte und Einrichtung der öffentlichen Statistik im Königreich Bayern, München, 1895.  
Zeitschrift des kgl. sächsischen statistischen Bureaus, 41. Jahrgang, 1895.

Statistik des Hamburgischen Staates, Heft 18, Hamburg, 1900.  
Statistische Mitteilungen der niederösterreichischen Handels- und Gewerbekammer, Heft 3, Wien, 1898.

Hans von Scheel (director of the Imperial German Statistical Office), Die deutsche Berufs- und Betriebszählung vom 14. Juni, 1895. (Jahrbücher fuer Nationalökonomie und Statistik, III. Folge, 15. Band, pages 1-17.)

Protokoll ueber die am 13, 14, 15, and 16, Mai, 1895, zu Frankfurt, a/m. abgehaltene X. Konferenz der statistischen Aemter deutscher Städte.

Protokoll ueber die am 23, 24, 25, and 27. April, 1896, zu Magdeburg, abgehaltene XI. Konferenz der Vorstände der Statistischen Aemter deutscher Städte.

Statistisches Jahrbuch der Stadt Berlin, XXI. Jahrgang.  
Mittheilungen des Statistischen Amtes der Stadt Muenchen, XV. Band.

Breslauer Statistik, Band XVIII.  
Verwaltungsberichte der Städte Dresden (1895), Leipzig (1895), Stuttgart (1892-1895).

Besides this, verbal and written information was obtained from Regierungsrat Dr. Friedrich Zahn, member of the Imperial German Statistical Office; Ministerialrat Dr. Max Proebst, director of the Royal Bavarian Statistical Bureau; Dr. E. Hirschberg, assistant director of the statistical office of the city of Berlin; Mr. I. Theill of the statistical office of Munich. Unprinted and unpublished material was obtained from the royal statistical bureaus of Prussia and Bavaria and from the Municipal statistical offices of Berlin and Munich. Various other governmental and municipal statistical bureaus furnished copies of their publications pertaining to the census.

chiefs of the municipal statistical bureaus, began to recommend the taking of a new census, on the ground that the data of 1882 had become obsolete and that it was desirable to find a basis of comparison in order to determine the changes which had occurred in the economic situation of the country. The government finally yielded to the arguments and admitted the necessity of a new occupation and industrial census.

*The legislation for the census.*—In 1894 the secretary of the interior decided that a new occupation and industrial census should be provided for by a law similar to that authorizing the census of 1882, with a view to obtaining results comparable with those of that census. The law was promulgated on April 8, 1894, and contained the following provisions:

SEC. 1. In the year 1895 an occupation and industrial census shall be taken for the extent of the Empire.

SEC. 2. The statistical investigations shall be carried out by the governments of the states. The furnishing of the necessary forms and the working up of the material in so far as not assumed by the governments of the states shall devolve upon the Empire. The expenses incurred by the governments of the states for furnishing the material shall be defrayed by the Empire according to a rate to be fixed by the Federal Council.

SEC. 3. The questions to be propounded, aside from those relating to personal and conjugal condition and religion, may refer only to the conditions of occupation and other regular breadwinning activity. Any probing into the conditions of property or income is excluded.

SEC. 4. The Federal Council<sup>2</sup> shall determine the day for the census and issue the regulations necessary for the execution of this law.

SEC. 5. Whoever consciously answers untruthfully the questions addressed to him on the basis of this law or refuses to make the statements required of him by this law and the regulations issued and promulgated for its observance (sec. 4) shall be punished by a fine not exceeding 30 marks.

*The scope of the census.*—The general purpose of the industrial census, as officially defined, was to afford a basis of comparison with the census of 1882 and to furnish new and reliable data regarding the number and size of trade and manufacturing concerns.

In detail the census was designed to present a survey of the number and size (personnel and machines) of the concerns in each industry, distinguishing fixed concerns (including domestic industry) from itinerant (hawkers) and showing the form of ownership (individual, corporate, etc.), the composition of the personnel by working condition, age, sex, and real occupation, and the use of motors and machines—all this data to be returned in such a way as to allow the freest possible comparison with the corresponding results of the census of 1882.

*The drafting of the plan.*—The plan of the census was prepared in the Imperial Statistical Office. It was then discussed by a conference of statisticians,<sup>3</sup> debated by

<sup>2</sup> The Federal Council (Bundesrat) numbers 58 members, who are appointed by the government of the individual states and vote according to instructions.

<sup>3</sup> For the census of 1882 the corresponding conference of imperial and state statisticians discussed only the technical execution, not the plan of the census.

parliament, and finally adopted by the Federal Council, without suffering any material change. The amendments proposed by the press and by scholars during its passage through these different stages did not essentially affect the original form. From the first the idea had been that the possibility of comparison with the census of 1882 should be preserved. In the main, therefore, the plan of that census was adhered to, while the experience gained under it determined the trend of such changes as were made.

*The date.*—As the census was not a periodical one, there was no motive to take it in any particular year. The decennial period following the census of 1882 had elapsed, and as it now seemed advisable to take another census as soon as possible, the year 1895 was chosen. The law had left the day and month to the decision of the Federal Council, and, as it was desired to compare the results of the new census with those of the old, it was decided that the census should be taken on Friday, June 14.

*The administrative authorities.*—The German Empire consists of 25 confederate states (4 kingdoms, 6 grand duchies, 5 duchies, 7 principalities, 3 free cities) and 1 imperial province (Reichslande Elsass-Lothringen).

Although the census was authorized by an imperial law accepted by the representatives of the whole nation, the expenses to be borne by the Empire, and the methods and plans fixed by the Federal Council representing all the state governments, the arrangement and execution of the work were not in every respect and at every stage subject to the central administration.

It was the general opinion that the states and large cities—with the consent of their state governments—ought to have the right of supplementing the official schedules according to their local needs. This opinion was respected by the Federal Council, which proclaimed that the models printed as appendices to its decree were authoritative with regard to content, but that changes in form and the inclusion of additional questions by the state governments were allowable. The deviations, then, might comprise the insertion of additional questions, the enlargement of questions or of explanations, certain changes in the regulations regarding the method of census taking, and immaterial changes in form; but in fact no deviations were made which had the effect of altering in any essential feature the schedules and instructions decided upon by the Federal Council.

Bavaria, Saxony, and Hamburg were the only states to introduce additional questions, and of these only one, a trifling addition made by Saxony, touched upon trade and manufacture. Besides this, some states made a few formal changes in headings and in single expressions. To some extent this was necessitated by differences in administrative and economic conditions.

The census taking itself was decentralized; it was to

be effected by state governments. The general regulations, schedules, and instructions had been issued by the Federal Council on April 25, but special regulations and communications had to be issued by the state governments, together with the schedules and instructions, and sent to the imperial chancellor by May 15. They were issued in Prussia on April 16, in Wurttemberg on April 22, in Bavaria on April 23, in Saxony on April 30.

The same system as that observed in furnishing the schedules was adopted in the revision and working up of the returns. A part of the commission which formulated the plans for the census had asked for a centralization of the whole tabulation; but the representatives of the governments in the commission declared that, for political reasons, the Federal Council would not give its consent to restricting the state governments in the disposition of their census material or in their option of tabulating it themselves instead of having it tabulated by the imperial office.

#### I. IMMEDIATE PREPARATIONS.

*The division of the country.*—As has been stated, the law ordered that the census be taken by the individual state governments. Accordingly it was their task to subdivide their territory for census purposes; but the federal instructions to the local authorities, which were issued as an appendix to the regulations of the Federal Council, laid down certain general principles which had to be observed throughout the whole Empire. It was here directed that the census be taken by communes, and that enumeration districts be formed within the communes of such a size that one enumerator could distribute the schedules in one day and collect them in another day. Furthermore, it recommended that each enumerator be given not more than fifty households, also that buildings with numerous occupants, such as barracks, penitentiaries, and hospitals, constitute one special district. It would be unnecessary to subdivide communes of not more than fifty households unless the farms or plants were very much scattered.

It devolved upon the individual governments to give further instructions. These instructions did not vary essentially in the different states, or make any considerable addition to the federal instructions. The details of the subdivision into districts were left to the communal authorities. The larger the commune the greater were the difficulties of their task. In the smallest communes no subdivision was required. In the largest cities the methods were more or less elaborate. Here the subdivision was generally made on the basis of a preliminary census or other preparatory investigation, where such took place; or with the help of real estate, house, or household registers, where they were available; and occasionally with regard to the industrial geography of the city.

Below is a tabular statement showing by groups of communes the subdivision of the kingdom of Prussia

into enumeration districts, with the average size of these districts. Corresponding figures are also given for some of the larger cities outside of Prussia.

COMMUNES WITH INHABITANTS.	Number of communes.	Number of enumeration districts.	Inhabitants.	Households.	Industrial concerns.	Enumeration districts by communes.	AVERAGE PER ENUMERATION DISTRICT.		
							Inhabitants.	Households.	Industrial concerns.
State.	54,176	216,789	31,491,209	6,644,098	742,119	4.0	145	31	3.4
100,000 and more.....	18	46,069	4,472,764	1,033,828	150,886	2,448.8	97	22	3.3
20,000 to 100,000.....	95	20,353	3,380,814	714,003	97,702	214.3	166	35	4.8
5,000 to 20,000.....	506	25,968	4,522,298	966,738	130,354	51.3	174	37	5.4
2,000 to 5,000.....	1,193	21,004	3,628,781	764,024	108,926	17.6	173	36	5.2
Less than 2,000.....	52,364	103,395	15,486,552	3,165,505	245,251	2.0	150	31	2.4
Munich.....	2,201	301,307	92,236	16,239	.....	.....	178	42	7.4
Leipzig.....	2,033	386,397	85,822	14,660	.....	.....	190	42	7.2
Dresden.....	2,287	324,341	76,399	13,907	.....	.....	142	33	6.3
Stuttgart.....	680	153,811	32,961	6,175	.....	.....	226	48	9.1

From this table it appears that the average size of the enumeration district was much below the maximum of 50 households prescribed in the federal instructions. In Prussia it was 31 for the state as a whole and also for communes of over 2,000 population, which, of course, were all subdivided. The smallest districts are found in the group of largest communes. Here the number of households to a district is only 22 and the number of persons 97. The average number of industrial concerns for which schedules had to be made out varies in the five groups of communes from 2.4 to 5.4. The number of inhabitants, households, and industrial concerns per enumeration district was largest in towns of 5,000 to 20,000 inhabitants.<sup>1</sup> In Dresden, and especially in Munich, Leipzig, and Stuttgart, the enumeration districts were larger than in the large Prussian cities, but did not reach the limit prescribed by the federal instructions. In the free city of Lubeck there were about 900 enumeration districts, each containing from 15 to 20 households, a condition similar to that of large Prussian cities. But in the two other free cities, Hamburg and Bremen, the subdivisions were quite different and even in contradiction of the federal instructions, for in Hamburg the 1,262 districts contained on an average not less than 122 households, with 525 inhabitants and 21 industrial concerns, and in Bremen, which altogether was subdivided into only 77 enumeration districts, there were about 400 households and 1,800 inhabitants to a district.

*The distribution of forms.*—The census law had authorized the state governments to furnish the forms if they wished to do so. The regulations of the Fed-

eral Council added that if they were not furnished by a state authority compensated by the Empire, they would be furnished by the Imperial Statistical Office and that the state governments should come to some understanding with the Imperial Office in regard to this matter. Most of the larger states made use of their right to undertake this work themselves<sup>2</sup> and generally assigned it to their statistical bureaus.

*Financial preparation.*—All the expenses, except for the enumeration itself, had to be borne by the Empire. The rate provided in the federal regulations as compensation to the states willing to furnish the forms and work up the material was 3 pfennigs (0.7 cent) per head of the population found in the census of 1890, one-third of which could be drawn on April 1, 1895, the second on October 1, and the last on January 1, 1896. The compensation was finally to be fixed according to the actual population found at the census. On April 23, 1896, the Federal Council decreed that one and one-fourth pfennigs (0.3 cent) additional per head be placed at the disposition of the states from October 1, 1896.<sup>3</sup>

As the law stated that the census was to be effected through the state governments and, further, that the expenses of furnishing the schedules and working up the material were to be borne by the Empire, the implication seemed to be that the state governments were to bear the expenses for the actual enumeration. But that was not the case. The Prussian instructions to the administrative presidents expressly state that no compensation for enumerators could be claimed from either the imperial or the state treasury and that this fact should be especially impressed upon the authorities of the communes. Later on, motions on the part of the communes that they receive compensation for this expense were rejected.

It fell, consequently, to the lot of the single communes to provide the means not only for the staff for the census taking and revision, but likewise for the preparatory work which was sometimes very expensive.

*Organization of the staff.*—(a) The higher officers: The census law contained no provisions regarding the organization of the census takers. The regulations issued by the Federal Council stated that the communal authorities might, upon their own responsibility, organize census commissions. The regulations issued for Prussia did not add anything to these federal regulations. The same may be said of the Bavarian instructions, which, however, recommended very strongly the formation of census commissions.

<sup>2</sup> Prussia, Bavaria, Saxony, Wurttemberg, Baden, Hesse, Braunschweig, Hamburg, Bremen, and Lubeck.

<sup>3</sup> The total cost of the census to the Empire was \$845,000 (3,550,420 marks). Of this amount, \$556,000 (2,336,134 marks) was expended for the occupation census, \$96,000 (403,361 marks) for the agricultural census, and \$193,000 (810,925 marks) for the trade and manufacturing census.

<sup>1</sup> The subdivision seems to have been complete in the cities as well as in the country. As an exception, in Prussia it may be mentioned that in the subdivision of the city of Danzig, corner lots, short communicating streets between market places, and in one rural district an entire mill lot, were overlooked.

Thus the details of selecting and organizing the staff of census takers were left to the discretion of the communal authorities. In the smaller communes all the preparatory work was done by the chief communal officer. This was, however, not possible in the large cities. Here, and in extensive rural communes, census commissions were generally established. Still there were some cities, like Leipzig, Königsberg, Strassburg, Dortmund, Lubeck, and Mainz, which did not have them.

The organization of the commissions and superior officers may be shown in detail by the examples of two cities, Berlin and Breslau. Of these, the former had one and the latter several commissions. In Berlin the first step was the constitution of a census commission of 12 members, all being councilors and delegates of the city, which was "authorized and required to order, administer, and supervise all the measures necessary for a legally complete and trustworthy execution of the work of taking the census."

The commission appointed a deputy for each one of the 96 police districts in Berlin, selecting generally one of the chairmen of the city districts, while the chairmen of the police wards were required to perform the police functions of the canvass. The deputy and the chairman of the police ward were to work in harmony until the completion of the census taking; and the latter was also to be invited to the meetings of the deputies.

In cooperation with a commissioner of the police and the director of the municipal statistical office, the census commission issued, on May 9, the working plan for the deputies of the districts and the circuit commissioners (the superior officers of the census). According to this plan, each deputy had to obtain from the statistical office before the 21st of May a list of the residents in his district who had declared themselves ready to cooperate in the census taking. Between the 21st and the 25th he was to divide his district into circuits, respecting as far as possible the proposals of the chairmen of the city districts. Each chairman was to choose the circuit of which he himself wished to be the commissioner. The deputy was then to put a circuit commissioner at the head of each of the other circuits, and to provide substitutes for himself and for the circuit commissioners.

He was authorized to ask the transfer of a municipal officer to assist in the office work, especially in the distribution and collection of the census material and in the verification, revision, compilation, and statement of the results. The cost of these assistants and the expenses of the deputies amounted to \$3,185. The deputy was to complete the organization of his district by May 30 and to send, on May 31, a plan of the whole subdivision to the statistical office. From this date until the census taking began, it was the duty of the deputies to see that vacancies in the staff of the

census personnel were filled and that any lack of schedules was supplied.

In Breslau a chief commission was formed, consisting of the seven members of the statistical deputation, including the director of the municipal statistical office and a police councilor. Its scope was defined in language similar to that used in Berlin. It was "to order and supervise all the measures necessary for a complete and trustworthy execution of the work of taking the census." In each of the twenty-four police wards the census taking was under the charge of ward census commissions. These were composed of a citizen, as chairman, and his substitute, both nominated by the chief commission; the commissioner of the police of the ward; an officer of the magistracy selected by the first mayor; and at least three assessors who were nominated by the chairman of the commission from among the enumerators of the ward. The municipal statistical office, acting as the organ of the chief commission, was to conduct the correspondence regarding the formation of the ward commissions; to secure appropriate rooms for the meetings of the enumerators as well as for the later collection and preliminary revision of their portfolios; to determine by consulting the real estate lists the number of schedules that would be needed in the several enumeration districts; and to fill out the portfolios accordingly, and provide for their transportation to the census wards.

While, then, in Berlin the formal direction of the census was withdrawn from the statistical office and placed in the hands of a census commission, in Breslau the part which the statistical office had in the supervision was considerable.

Although, on the whole, especially in the large cities, the census commissions seem to have promoted the work considerably, that was not everywhere the case. Sometimes they proved to be useless and inadequate, and in a few cases even the chiefs of the communes were not able to take up the duties they were called upon to perform in connection with the census.

(b) The enumerators: As regards the enumerators, the federal instructions to the local authorities simply stated that there must be one for every enumeration district, and that they should be selected with care and should be, as far as possible, unpaid volunteers. The regulations issued by the state governments did not add any details. Thus the matter was left entirely to the discretion of the communes, and the methods by which the enumerators were selected varied according to the organization of the higher census officials in the different places. In the small communes the selection was made entirely by the chief of the commune. The methods followed in some of the larger cities may be shown by examples.

In Berlin the circuit commissioners were to name the enumerators between May 26 and May 30, selecting, as a rule, the house owners or their representatives,



and sending the list to the deputy of the district. In Breslau the members of the ward commissions, and especially the police commissioners, were required to secure the enumerators by selecting "residents of their wards who are ready to accept the honorary office, and whose public spirit and capabilities guarantee that they will discharge the duties of census taking with care and in accordance with the regulations." In the city of Hamburg the enumerators were paid and were appointed by the census commissioners. In Bremen, where they were likewise paid, they were appointed by the police authority. In response to the appeal issued by this authority in the daily press 172 persons presented themselves, and 77 were chosen after it had been ascertained that they had never been offenders against the law. In the last two cities, where the office was remunerative, and also in the state of Mecklenburg, where the acceptance of the position as an honorary office without remuneration was obligatory, enumerators were secured with comparative ease. But elsewhere it proved, as a rule, extremely difficult to find a sufficient number of competent persons who could be induced to accept the unpaid honorary office. Naturally the methods resorted to in order to obtain voluntary enumerators varied considerably in different places.

It may be worth while to describe in detail the plan followed in one large city, noting the points of difference in the methods of other cities. Dresden, a city which experienced comparatively little difficulty in obtaining enumerators, will be taken as the main example. In order to obtain voluntary enumerators for the 2,287 districts of this city, the statistical office adapted the following devices:

1. A notice was posted in the streets and published in a newspaper inviting the citizens to act as enumerators. The number of persons who presented themselves was 109.

Likewise, in the city of Berlin a communication was printed in ten newspapers and posted in the streets daily for a week asking teachers, municipal officers, policemen, house porters, etc., to volunteer their services. In a similar way in Hanover the procuring of voluntary enumerators was begun early with an editorial appeal in the press of all the parties. Similar public invitations were issued in Leipzig, Chemnitz, Dortmund, Altona, and other cities.

2. Letters numbering 4,632 and accompanied by blanks for the answer were written to private persons. Of the replies, 1,120 were affirmative.

Likewise in Frankfurt private persons were secured as enumerators through letters forwarded by the magistracy. The lists of citizens, aldermen, and jurymen kept by the statistical office were utilized for this purpose. In the city of Breslau the police used a register of the persons who had been engaged in the population census of 1890, to whom a verbal invitation was addressed by the policemen. Likewise in Leipzig all

persons who had been enumerators at the population census of 1890 were addressed by letters. The statistical bureau of the city of Hanover sent personal requests to the members of the chamber of commerce; to numerous persons engaged in trade or manufactures; to selected house owners; to members of the union of architects and engineers; to the chairmen and other members of the boards of guilds; to a number of honorary officers (corporals of citizens, chairmen of the city districts, arbiters, councilors of orphans, overseers of the poor); and to the sworn estimators of fire insurances. In a similar way the services of private persons were solicited in Cologne, Chemnitz, Dortmund, Gorlitz, Mannheim, Mainz, Munich, Plauen, and elsewhere. But there were also cities which did not choose this method. The city of Stuttgart did not use this means on account of the fact that at the last preceding population census, out of 1,200 private persons invited by letter three-fourths had not answered at all, and only about 40 had accepted the office. But, as it could not dispense with the cooperation of private persons, it made use of the organization of the unions of citizens for enrolling voluntary enumerators. The communal council, acting as a census commission, sent corresponding circular letters to the presidency of the eleven unions. In a similar way the overseers of the poor were asked to cooperate. The city of Altona addressed circular letters to all the overseers of the poor, the delegates of the cities, the guilds, the communal, military, and other unions. In Hanover a number of citizens, unions, political clubs, and technical unions were invited to participate as enumerators.

3. The authorities of the Empire and the state and a number of larger firms were required to circulate among their personnel a list sent to them for that purpose. The lists went back to the statistical office with 158 names.

The city of Altona likewise addressed circular letters accompanied by several copies of lists for the entry of the names to the provincial tax authority, the railway administration, the superior custom house authorities, the imperial post offices, the county courts, and to several institutions, such as banks. Such direct invitations to the governmental officials seem on the whole not to have been very successful. The appeal of the city of Stuttgart to the various officials of the government proved to be an entire failure. Only after an appeal to the governmental statistical office and through its assistance were 300 officers secured as enumerators. Other cities left it to the government from the beginning to request its officials to cooperate. In Hanover the imperial and royal authorities were asked by the administrative president to recommend to their officers participation in the census work. Likewise in Munich the governmental departments facilitated the securing of the enumerators by encouraging their officers to cooperate.



4. Proclamations were issued and posted in the lobbies of the royal technical high school, the royal academy of arts, the royal high school of veterinary surgery, and the royal school of art industry; 23 students presented themselves.

The services of the students of the university of Breslau were solicited in the same manner. In Leipzig all the students, with the exception of the foreigners, were personally addressed by letter. Appeals were likewise made to university students in Munich, Strassburg, and elsewhere.

5. The school board issued an appeal to the teachers of the municipal schools. In this way 426 teachers were secured as enumerators. The same request was addressed by the city council to the superintendents of the nonmunicipal schools; 51 teachers presented themselves.

The census commissioners of Altona asked the superintendents of the higher schools and the city councilor of schools to secure enumerators among the teachers. Similar steps, apparently with much success, were taken in Berlin, Breslau, Frankfurt, Gorlitz, Hanover, Leipzig, Mannheim, Mainz, Munich, Plauen, and elsewhere. In Hanover even the professors and instructors of the two royal high schools were asked to serve as enumerators.

6. By an order of the school board, the pupils of the municipal colleges, and, at the request of the statistical office, the pupils of the two seminaries of school teachers were asked by their respective superintendencies to cooperate as enumerators. About 400 presented themselves.

In Leipzig the superintendencies of all the colleges were requested by letter to urge the pupils of the higher classes to give their services. In a similar way the older pupils of the higher schools of Plauen were asked to cooperate.

On the whole it seems that the willingness, the zeal, and the capability were greatest among common school teachers. In some cities, however, for very diverse reasons the appeal to private persons met with but little success. Often there was a real deficiency of competent persons. In Breslau one-fourth of the enumerators actually selected were wholly incapable. On the other hand, there was a want of interest, an antipathy against the enumeration, and a reluctance occasioned by the unpleasant experiences that enumerators had undergone in unknown houses at former censuses. Sometimes persons who were able and willing to accept the office were really prevented from doing so by the nature of their occupation. At other places the citizens believed that the census was a municipal concern, and that it was parsimony on the part of the city not to pay the enumerators. Sometimes even those persons who declared themselves willing to accept the office abandoned it later on. In the city of Munster two-thirds of the enumerators declined at

the last moment to perform their duties. The difficulty of the task of finding enumerators does not seem to have been wholly appreciated by the governmental authorities. The Prussian statistical bureau states that "the securing of voluntary enumerators has, for the most part, been accomplished with ease," and the director of the Imperial Office says that "the census was taken by the way of voluntary and unpaid enumerators—with a few exceptions where a small compensation was conceded, as in Oldenburg." Now the securing of voluntary enumerators, to judge from the complaints of the minor administrative authorities, was everywhere difficult and in some places impossible. In only 6 of the 35 administrative districts of Prussia could a sufficient number of enumerators be obtained without pay. In every one of the 29 other districts some of the enumerators received more or less pay, the amount varying from 24 cents to \$4.76 each. The average was about 83 cents. In this way the city of Halle spent \$381, Elberfeld \$238, and Bromberg \$63. But the cities naturally tried to avoid incurring the extra charges and if possible filled the deficiencies by enlisting the services of municipal clerks, policemen, or military persons.

The occupations of the enumerators in some of the cities are given in the following tabular statement:

OCCUPATION.	CITY.				
	Berlin.	Dresden.	Leipzig.	Stuttgart.	Breslau.
Total.....	20,955	2,287	2,033	630	3,165
High school teachers.....	123	47	755	16	45
Common school teachers.....	998	436		132	363
Higher state officers.....	118		18	64	209
Lower state officers.....	578	326		98	
Higher municipal officers.....	28		304	30	86
Lower municipal officers.....	647			53	
Policemen.....	270	29	13	0	1940
Merchants.....		295	0		
Private employees.....		119	0		
Saloon keepers, etc.....	4,495	48	0	83	
Fabricants.....		41	0		
Others engaged in manufactures.....	1,615	42	0		994
Mechanics.....	3,742	312	2166	57	
Renters.....	3,531	108	0	23	84
Proprietors.....					285
Military persons.....	71	17	0	0	
Clergymen.....	31	0	0	6	
Students.....	15	269	261		
Pupils.....			449		
Apothecaries.....	124	10	0	7	
Physicians.....	115				
Agriculture, forestry, and gardening.....	86	16	0		
Pensioned officers and military persons.....	170	51	0		
Vice-landlords.....	2,510	0	0		
Porters.....					
Workingmen.....		75	16	0	
Authors.....	32	14	0	36	
Artists.....	70		0		
Engineers, etc.....		31	0		
Others.....	440	0	367	16	78
Not stated.....	653	0	0	0	72
Women.....	418	0	0	0	0

<sup>1</sup> Includes 80 "other officers."

<sup>2</sup> Including men of science.

<sup>3</sup> Paid enumerators and helpers.

*The instruction of the staff.*—Owing to the fact that the law authorizing the census ordered that it be taken by the states, and to the further fact that the Federal regulations directed that within the state it be taken by communes through the agency of enu-

merators, instructions had to be issued to state officers, to communal officers, and to enumerators.

As the Federal regulations stated that the further necessary ordinances and communications should be issued by the states, the instruction of the higher administrative bodies was committed to the state governments. The Prussian minister of the interior sent the regulations, containing remarks, explanations, and orders—particularly in regard to the royal district and county authorities—together with the forms and the instructions for the local authorities and the enumerators, to the chief presidents of the provinces, to the presidents of the administrative districts, and to the royal police president of Berlin. By these regulations the administrative presidents were required to submit any doubts about the inquiries in the schedules or the instructions to the Royal Statistical Bureau. In case this office was not able to decide the question itself, it was to submit the matter to the secretary of the interior. The administrative presidents were further required to instruct the county authorities and to send them for that purpose three complete sets of the schedules and instructions.

It then became the duty of the county authorities to provide for the proper instruction of the local authorities and chiefs of the communes and census commissions, and supply them with the special instructions issued by the Federal Council. The Federal Council also issued special instructions for the enumerators. The enumerators were asked to read these instructions thoroughly before beginning their work, in order to be able to take the census properly and decide any questions that might arise on principles uniform throughout the whole Empire. The federal instructions to the local authorities added only that the enumerators had to be well instructed regarding their duties and that the method of filling out the schedules could be learned from the instructions printed on them. The Prussian regulations said, in a very vague way, that the county authorities, including the chief officials of the city counties, should provide for the proper instruction of the census commissions and the enumerators. The Bavarian instructions added that the local authorities were to assist the enumerators by enlightening and informing them and in every other way necessary, and that the administrative authorities of the districts were to see that the enumerators of their districts met in adequate divisions at the beginning of June and conferred regarding a uniform enumeration and its proper performance. As far as practicable, an officer of the administrative authority of the district was to assist at these meetings.

The local authorities then regulated the further details. The first step referred to the instruction of the higher officials of the census taking.

In Stuttgart, where no special organization was established, the city resolved to restrict itself to printed

instructions. These were published in two long articles by all the newspapers of the city, and each enumerator received, besides, a printed "special instruction." In those cities in which special ward bureaus were established the enumerators were authorized to get further information there.

On the whole, the rather troublesome task of instructing the staff was left to the communes. Some communes claimed that the Federal instructions were inaccurate and ambiguous, while many denounced them as incomplete.

*Measures for increasing the trustworthiness of the census taking.*—The measures to secure the trustworthiness of the individual canvass consisted mainly in inducing the public to answer the inquiries willingly and correctly.

In order to remove every suspicion from the public mind, the census law stipulated that the questions to be decided upon by the Federal Council, aside from those relating to personal and conjugal condition and religion, might refer only to the occupation and other regular breadwinning activity. Any probing into the condition of property or income was excluded. The object of this restriction was to avoid asking for information which might be used by the financial authorities for tax purposes. While the law on the one hand thus tried to allay public suspicion, it endeavored to enforce truthful answers by providing that whoever knowingly answered the question untruly or whoever declined to give the information requested of him according to the law and the regulations decreed by the Federal Council would be fined not more than 30 marks (\$7.14). This was inserted in the law because the same regulation in the census law of 1882 was believed to have considerably promoted the success of that census. With the same object in view, the following declaration was printed at the head of the household schedules:

In order to obtain the basis for new statistics of the economic conditions of the German Empire, a new occupation census, which is to be connected with an investigation of the agricultural, forestry, and industrial concerns, has been ordered by the imperial law of April 8, 1895.

The statements will not be used for tax purposes, but only for statistical tabulation. Whoever knowingly answers the questions untruly or refuses to give the prescribed statements will be punished by a fine not exceeding 30 marks.

On the bottom of the schedule was printed the following:

Confirmation: That the statements in this household schedule have been made completely and according to the truth is certified by  
\* \* \* (signature of the head of the household or his substitute).

The industrial schedule begins in a similar way with the words:

Through these industrial schedules the endeavor is made to obtain the basis for a census of the trade and manufacturing concerns by number of persons, employment of motors and machinery. According to the law of April 8, 1895, the industrial persons are obliged to give the information necessary for the filling out of the industrial schedules.

It finished with the words:

The truthful filling out of this industrial schedule is certified by  
\* \* (signature).

The Prussian regulations said that as the household schedules contained a short declaration explaining the legal basis and the extent of the occupation and industrial census, the obligations and rights of the heads of the households, and the fines imposed, the government had desisted from making an additional declaration to this same end, and recommended that these statements on the household schedules, together with the main rules regarding the occupation and industrial census, be published in the official county newspapers, and that timely notice be given in the cities and in the country, especially in the communal meetings, in regard to the census taking, with an explanation of its scope, its problems, and the schedules.

While the threat of the fines seems to have had the desired effect—only a few had to be imposed—it seems that the enumerators did not always receive fair treatment from the public. It was charged that the people had not been instructed regarding the voluntary and honorary nature of the service of the enumerators or requested to assist them as far as possible. Some of them had been treated by the better classes as distributors and messengers. It also was charged by a number of magistrates that the instructions to the public printed on the schedules were too extensive and involved to be understood.

*Preliminary investigations.*—The regulations of the Federal Council stated in a very indefinite manner that before the distribution of the schedules the enumerator should learn how many households and agricultural and industrial concerns were in his district, in order to obtain a sufficient number of schedules, to arrange his work well, and to overlook nothing. The state regulations did not add any details. It was then practically left entirely to the local authorities to determine what kind of preparatory investigations should be made. The large cities generally made more or less elaborate preparations. Some of them were of the opinion that a direct preliminary census was necessary where the municipal statistical bureaus were not able to furnish from other material a statement of the number of lots, households, and industrial concerns as a basis for the distribution of the schedules. But this opinion was not shared by all. On the contrary, some held that a preliminary census was both questionable and superfluous. They were doubtful whether the municipal administrations had the legal right to take such a census, since it did not stand under the protection of the imperial law, and they maintained that the returns made by the house owners would be in many cases inaccurate, and that sufficient guidance for the enumerators could be obtained from existing material.

## II. THE ENUMERATION.

*The unit of the census.*—The unit of the industrial census of 1895 was to be the independent industrial concern (selbständiger Gewerbebetrieb). It will then be necessary to state how the three words "industrial," "independent," and "concern" were to be understood.

According to the explanations in the household schedule, the following were to be considered as industries:<sup>4</sup> Handicraft, industrial, and manufacturing trade or business of any kind. These included sewing, milliner's trade, laundry, and the like; building and artistic trades and art industry; mining, smelting, and salt works; horticulture and commercial gardening; fisheries; professional rearing of silkworms, singing birds, dogs, and like animals; banking, commerce and agencies for commerce, insurance, auctioneering, lending, renting (comprising the rental of steam engines and thrashing machines); employment agencies, and "commissionaire" businesses; burial of the dead; carting and livery business, including post chaises and street railways; water transportation, as freighter or ship owner, including rafting and ferry business; port and pilot service and other transportation business; also the business of lodging, boarding, and the sale of food and drink. Industrial undertakings of this description conducted by government communes or corporations—as building concerns and railway or telegraph workshops—were included, and also penitentiaries or houses of correction, if the product of these institutions was for sale or the work was carried on on the account of another.

The following were not classified as industries: Agriculture and forestry; hunting; breeding of farm animals; musical, theatrical, and show business; the business of physicians and accoucheurs; sanitariums and hospitals; educational institutions and schools; and the operation of railways, posts, and telegraphs.

The federal instructions to the enumerators added that distilling, brewing, tile burning, peat cutting, stone and limestone quarrying, the livery business of a farmer, and industrial dairying were also to be considered as industries.

*The finding of the units.*—The federal instructions to the enumerators had, as already remarked, given the very vague rule that the enumerator, before the distribution of the schedules, should learn how many and what households and industrial concerns were in his district, so that he might provide himself with the necessary number of forms, distribute his work wisely, and omit nothing. To this rule the state governments added no further directions. Its insufficiency for practical purposes, resulting, in particular, from its failure to distinguish between the country and large

<sup>4</sup>In the following pages "industry" and "industrial" will always mean "trade and manufactures."

cities, was criticised by the local authorities. In the villages where there were, as a rule, only a few enumeration districts, the enumerator, as a member of the common council, or as a teacher, might very well know every house and every person, or if he did not have that knowledge, he might easily acquire it. It was quite different in the cities, where generally he would not know any district perfectly and would not always be appointed for the one he knew best. In such cases, then, the federal instructions virtually asked the enumerator to take a preliminary census, to do which he had no authority, and, moreover, not the least inclination.

In many cases the local authorities endeavored to supply this deficiency and ascertain the number of households and industrial concerns to be canvassed. It remains to be seen how, in general, the cities, on the basis of that preparatory work, tried to aid the enumerators in their task.

In all of the seven cities where preliminary censuses were taken (Berlin, Munich, Breslau, Dresden, Leipzig, Magdeburg, and Gorlitz) the enumerators obtained from the authorities more or less detailed and exact information in regard to the houses belonging to their districts and generally in regard to the households and the industrial concerns also. They received either the schedules made out at the preliminary census or the addresses entered in the schedules to be used at the census proper. Sometimes, however, as in Munich and Dresden, they were especially instructed to rectify and complete the schedules of the preliminary census and to pay particular attention to the changes that might have occurred since it was taken. Some of the cities which had not taken a preliminary census, but made preparatory investigations from the material at hand, as Frankfurt and Mannheim, provided their enumerators with information about the households belonging to their districts, if not about the industrial concerns. But most of the cities did not even give this aid to the enumerators—as, for instance, the city of Cologne, which came to the conclusion that the cards of the control office of the inhabitants were not trustworthy; that the necessary statements about the place of business of the industrial concerns were altogether wanting; and that, moreover, if entries were made in the schedules previous to the canvass, many omissions must be expected from less zealous enumerators. With the same idea the city of Lubeck, which claimed to have a fair knowledge of the single households, did not furnish any addresses, fearing that the enumerators in distributing the schedules might content themselves with calling only on those whose addresses had thus been communicated.

*The method of canvassing.*—The federal regulations prescribed the use of the following forms:

1. The household schedule.
2. The agricultural card.
3. The industrial schedule.
4. The instructions to the enumerator.

5. The control list.

6. The instructions to the head official of the commune.

7. The commune schedule.

The principal schedule was the household schedule, which was the only one used for the occupation census and which furnished the basis for the larger part of the industrial census. It was of four pages (13.2 inches long and 9.6 inches wide). It contained on the first page the statements individualizing the schedule, namely, the number of the schedule, the name of the state, district, commune, place, street, and the number of the house and of the enumeration district. Then followed in a few lines the short statement, previously quoted (see page cccxxiv), concerning the purpose of the census and the fines. After this came instructions for the filling out of the schedule, which were practically addressed to the enumerators. Then followed explanations in regard to entries to be made in the several columns. These explanations were continued on page 4. Pages 2 and 3 contained the inquiries arranged in 18 columns. These pages were subdivided into two parts. The upper and larger, of 15 lines (List A), was for all the persons present on the night of June 13 to 14 in the dwelling place of the head of the household and the rooms belonging to it; the lower one, of 4 lines (List B), for the persons belonging in the household, but temporarily absent. For both parts an example was printed at the head. The order in which the persons were to be entered was: Head of the household, wife, children, other relatives, industrial helpers, domestic and industrial servants, other members of the household, and persons temporarily present. The last part of page 4 contained statements in regard to filling out the agricultural cards and industrial schedules. Last of all came the affirmation to be signed by the head of the household or his representative.

According to the instructions printed on the household schedule, it was to be filled out in the forenoon of June 14. The head of the household was to enter in List A (persons present) all who passed the night of June 13 to 14 in his dwelling and the rooms belonging to it, no matter whether they were permanently or temporarily present, or whether they were natives or foreigners, military persons or civilians. If a person during the census night had been in different dwellings, his own dwelling, or if he was only in dwellings other than his own, that in which he stayed last was to be considered as his quarters for the night. Persons who had passed the census night in no dwelling (as those who were traveling through the night, especially railway and postal employees, workers, watchmen, etc., who were occupied in the night outside of their dwelling) were to be entered in the schedule of that household in which they arrived in the forenoon of the 14th.<sup>1</sup> Per-

<sup>1</sup> This rule being somewhat contradictory to the instructions to the enumerators—which ordered that household schedules be left in tents serving temporarily for night lodging for building laborers, etc.—caused double enumerations, such as building watchmen, etc., being often counted at both places.

sons born before midnight or deceased after midnight were to be included. In List B (persons temporarily absent) the temporary absentees were to be entered, especially the head of the household if temporarily absent.

The federal instructions as to the concerns for which an industrial schedule must be filled out proved to be so insufficient that even the directors of the municipal statistical bureaus judged themselves unable to give an authoritative interpretation of them and resorted to an inquiry of the Imperial Statistical Office. Upon further requests from various authorities, members of census commissions and enumerators, the Prussian statistical bureau on June 7 issued a communication containing the following brief orders:

An industrial schedule is also to be filled out by such industrial persons, mechanics, domestic weavers, innkeepers, owners of small commercial businesses as do not work with helpers especially appointed for the business but whose family members (wife and children) assist them in the business, if not as proper helpers yet regularly and not merely occasionally. In such cases an industrial schedule is to be made out even when the assistance of family members is not active on June 14 but takes place regularly and not merely occasionally during the period of operation. For branches (offices and shops) in which only one appointed (dependent) person is occupied an industrial schedule must, nevertheless, be made out. That is necessary, since otherwise the dependent single salesmen, etc., in such branches would be lost to the industrial statistics as a part of the industrially active population. But if the branch shop is operated by an independent owner (perhaps for a share of the profit, or the like), but without helps or motors, no industrial schedule is to be made out.

The industrial, like the household, schedule was of four pages (13.2 inches long and 9.6 inches wide). It began with the individualizing statement (state, district, commune, number of the household schedule to which it belonged, number of the enumeration district, number of industrial schedules in addition to this filled out by the same person and corresponding to the same household schedule). Then followed the very short exhortation, previously quoted, to the industrial persons and the instructions for filling out the schedule; then the inquiries which were continued on page 2. These numbered 14, all but one of which could be answered by simply writing one or two words, a figure, a "yes" or "no," or by underscoring one or several words. The remaining question required the filling out of tables and included a classification of the employees according to their actual occupation. Page 3 was reserved for this classification. It was headed by an illustrative example and called for a table, the rubrics of which were not specified, so that the method of answering was left to the discretion of the one who had to fill out the schedule.

For the control of the delivery of the schedules the enumerators received control lists. It was a schedule of four pages (13.2 inches long and 9.6 inches wide), containing 75 lines—one for every household. The heads of the columns were: (1) Designation of the houses in which the enumeration took place by street,

ward, or other designation; (2) number of the house or other designation of the building; (3) designation of the household (the firm, the institution, etc.); (4) current number of the household schedule; (5) males present entered therein; (6) females present entered therein; (7) agricultural cards filled out; (8) industrial schedules filled out; (9) remarks.

At the head of the list the location, nearer designation, and boundary of the enumeration district, and the name of the enumerator were to be entered, and (at the bottom of the fourth page) the sums of the columns, the signature of the enumerator, and the date of the control. Every enumerator received two of these control lists.

*The inquiries.*—The law, as already explained, did not designate the census inquiries. It merely provided that the questions, besides those relating to personal and conjugal condition and religion, could refer only to the occupation and regular breadwinning activity, and prohibited any prying into the conditions of property and income.

The household schedule called for the following data regarding each person present and each person temporarily absent: (1) The first name; (2) the family name; (3) the relationship to the head of the household or other position in the household; (4) the sex; (5) day and year of birth; (6) the conjugal condition (single, married, widowed, divorced); and (7) the religious confession. It further asked for the principal occupation (or only occupation) as indicated by (8) the branch of occupation, that is, the principal or sole source of income, and by (9) the position therein, whether independent or otherwise; also the accessory occupation (secondary industry), by (10) branch and (11) position. Independent industrial persons and domestic workers had furthermore to state (12) whether the business was itinerant (hawkers), and whether it was conducted for the most part at home for an outside business; also (13) whether it was conducted with at least one helper, apprentice, or other laborer, etc., or with active co-proprietors or cooperating members of the family; and (14) whether any motors propelled by wind, water, steam, gas, oil, benzine, ether, hot air, compressed air, or electricity, or any steam boilers, steam vats, steamships, or sailing vessels were used. The following questions applied to male and female laborers, servants, journeymen, or other employees; also, to domestic laborers (Heimarbeiter) and home workers (Hausindustrielle), with the exclusion of those who were permanently unable to gain their own livelihood: (15) whether at the present time working (employed); (16) if not, how many days out of work (unemployed); (17) Whether unemployed by reason of temporary inability to work. The last column (18) of the schedule was devoted to remarks (especially whether only temporarily present, and in the list of those absent, the reason for the absence).

The above list includes all the questions that were asked in regard to concerns not employing either help-

ers or motors.<sup>1</sup> On the back, the schedule asked whether any industrial schedules had been filled out; and if so, how many? If several co-proprietors or other managers existed, the name and residence of the one who had taken charge of filling out the industrial schedule was to be given. The place of business of the concern was to be stated if it was distant from the residence.<sup>2</sup>

The industrial schedule to be filled out for each industrial independent concern employing helpers or motive power contained the following inquiries: (1) The name of the industrial person or of the manager of the business, and, if different from it, the firm name of the business; (2) the home of the industrial person; (3) the business place of the concern, and, for branch establishments, the place of the main industrial concern also; (4) the kind of industry; (5) in case the concern is not fully operated during the whole year, the months of full operation; (6) whether other business managers participate in the direction of the concern; if so, the name and home of the one who has undertaken to fill out the schedule; (7) whether the industry is conducted by a single person, several partners, or a legal body (corporation, etc.); (8) whether the manager of the concern is owner, lessee, or other manager, whether he works at home for the account of another, and whether he works exclusively with members of his family; (9) whether the industry is a principal or a secondary occupation. The next inquiry (10) asked for the number of persons employed both on June 14 and on an average during the year or period of operation and was divided into (A) the number of persons by sex occupied within the business place of the concerns, and (B) the number occupied outside the working place but on the account of the business.

<sup>1</sup> The answering of questions 8 to 11 regarding the principal and accessory occupation caused the most difficulties. In spite of their importance these columns were often not properly filled out. Workmen and merchants, for instance, were apt to designate themselves simply as such without any additional detail. This incompleteness of the answers was sometimes attributed to the unclear wording and to the deficiency of the explanations; sometimes to the fact that these explanations were not read by the public. The doubt whether question 13 had to be answered by "yes" or "no" has already been mentioned.

<sup>2</sup> The differences between the inquiries in 1882 and 1895 are several: (1) In 1882 for children under 14 years of age not working for wages or serving, only the total number by sex in every household was asked; in 1895 all the data were asked for every person, as the Imperial Office believed that the summary inquiry of 1882 was the reason for the deficiency of 400,000 in the number of children reported at that census. (2) While in 1882 only the number of years of age at the last birthday was asked, in 1895 the day of birth was asked. (3) The religious confession was asked in the same way at both censuses. It is hard to understand how the Imperial Office could state that the confession was a new question in 1895. (4) In 1882 the question whether the business was performed itinerarily (as hawkers) or mostly at home on the account of another was not asked. (5) In 1882 the questions about unemployed were not asked. (6) In 1882 the former occupation was asked for persons who had exercised a principal occupation but on account of old age, or as consequence of wound or illness, had become permanently unable to gain their own livelihood (are no longer or only secondarily breadwinning). From widows was asked the principal occupation of the (last) deceased husband. These questions were not asked in 1895. (7) In 1882 the questions about persons temporarily present were more detailed.

The former (A) were classified as (a) active owners, co-proprietors, lessees, managers; (b) administration, countingroom, and office personnel, among them the apprentices; (c) technical superintending personnel and higher technical officials; and (d) other personnel (helpers, laborers, carters, machine hands, etc.), including the members of the family occupied professionally and regularly in the concern as helpers, journeymen, apprentices, and the servants engaged for the industrial concern. As regards this group of "other personnel" the schedule furthermore required a classification by age (over or under 16) and by occupation; also (a statement of) the number of apprentices and of married females,<sup>3</sup> with the number of the former living in the household of the manager; finally (e) the number of individuals by sex, occupied as a rule or on an average during the year or period of operation. Then (f) the other family members cooperating in the business on an average during the year or period of operation were to be given classified by age (over or under 16) and sex. The outside workers (Class B) were to be classified with respect to situation as follows: (a) Workers at home, and also their helpers; (b) itinerants; (c) workers in penitentiaries and houses of correction. The remaining questions were: (11) Whether the concern used motors or power engines moved by elementary power; (12) the horsepower of each; (13) the number and kind of machines; (14) in case there were industrial branches constituting one "combined" concern, the name of these branches, the designation of the combined concern, the total number of persons, and the total horsepower of the motive machines.<sup>4</sup>

<sup>3</sup> The Imperial Office states that information about the age and conjugal condition was asked with a view to labor legislation. For this purpose it was thought desirable to ascertain the proportion in which the adult juvenile classes were represented among laborers, and especially among the cooperating members of the family, and the number of married women industrially active as laborers. Under juvenile laborers, in agreement with the legislation (sections 135 and 136 of the industrial code) were understood the laborers 16 years of age and under. But it may be added that, on the whole, the widely extended unfactory-like occupation of children obliged to attend school, especially in the domestic industry, and further as distributors, errand boys, skittle boys, etc., are only imperfectly stated.

<sup>4</sup> The main differences between the inquiries on the industrial schedules of 1882 and 1895 were as follows:

Question 5. In case the industry is not in equal operation during the entire year, state the months of full operation added in 1895.

In question 6 only the name and home of the one who has filled out the schedule is asked, while in 1882 the names and addresses of all the proprietors were asked.

In question 7 the specification of the ownership is larger in 1895. In question 8 the question "Do you work exclusively with members of your family?" was added in 1895.

In question 10 the specialization of the personnel was extended in 1895. The office personnel (10Ab) is distinguished from the technical superintending personnel (10Ac). Among the other personnel (10Ad) the persons under and over 16 years of age are distinguished, the number of apprentices and of married females are especially asked, and the number of the former living in the household of the manager of the concern. The specialization of the actual occupation of the personnel entered under 10Ad on page 3 is an addition, and question 10Af concerning the members of the family is also new. Question 10B is enlarged.

Question 11 has been extended in 1895 according to modern exigencies.

Questions 12 and 13 regarding horsepower and machines, including the register of machines on page 4, were added in 1895.



## III. THE REVISION.

*By the enumerators and other inferior officers.*—With regard to the collection and the verification of the schedules, the federal instructions to the enumerator say:

The enumerator will begin by noon of the 14th the collection of the household and industrial schedules and agricultural cards and finish, in any event, by the 17th. By this day, also, the agricultural cards and industrial schedules which it was necessary to furnish additionally or which were otherwise behindhand must be filled out and collected. The enumerator will, at the place where the schedule was made, immediately examine it closely in all its parts, rectify errors, and have deficiencies supplied or supply them himself. He will also see that no agricultural card and no industrial schedule is wanting. Where several kinds of industry are to be stated at the concern of the owner, the corresponding number of industrial schedules must be filled out. Every filled-out schedule must be provided with the signature asked for thereon.

With regard to the industrial schedules, the enumerator had to see that one or more were filled out for every industrial concern. He was directed to make sure, in particular, (a) that every industrial employer of the kind described in the instructions printed on the industrial schedule had filled out a schedule, even if he did not employ persons within his dwelling place or workshop, but only outside; (b) that where there were co-proprietors or several managers of the business, they agreed as to which should fill out the industrial schedule; (c) that where anyone conducted commonly several kindred industrial concerns—for example, a grain and a saw mill, a weaving and a dyeing mill—he first made out an industrial schedule for each single branch of the combined concern, distributed the total personnel among them, and then entered the statements about the combined business on the schedule of the principal branch. In this way each person was to be enumerated but once. Those who operated in several concerns were to be enumerated where they worked the greatest length of time.

The enumerator, in order to furnish for himself, as well as for the communal (local) authority (census commission), a check on the completeness of the returns, was obliged to fill out a clean copy of the control list and to arrange the schedules in an order corresponding to that list, so that for every building and every household the household schedules, agricultural cards, and industrial schedules lay together. He was also to take the opportunity of obtaining any schedules that might still be lacking. When the residence of the industrial person lay in another district, and for that reason the industrial schedule was not accompanied by a household schedule, that fact was to be made evident by entering the place of residence on the control list in the column for remarks.

Neither the state government nor, as a rule, the cities seem to have made more definite these rather vague directions for the verification to be made by the enumerators.

According to the federal instructions, the enumerator was to deliver the schedules, together with the two copies of the control lists, to the local authority (census commission) by noon of June 21. The state governments were authorized to fix an earlier limit. The Saxon instructions, for instance, chose June 19.

In the cities where there were officials between the enumerator and the local authority, or census commission, special regulations were of course issued concerning the revision to be made by the different officials and concerning also the terms of delivery.

*By the communal authorities.*—The federal instructions to the local authorities in regard to the work of revision were, to the regret of some cities, as vague as those to the enumerators. They contained simply a provision that the verification of the entries with reference to completeness and accuracy should begin immediately after the delivery of the schedules. In this absence of more explicit directions the cities sometimes adopted very elaborate schemes of their own.

*By the central authorities.*—The census law and, in a more definite manner, the regulations of the Federal Council had, as has been seen, made it discretionary with the state governments to tabulate the material themselves, with compensation from the Empire, or to have it tabulated in the Imperial Statistical Office.

The following 10 states undertook the tabulation themselves: Prussia, Bavaria, Saxony, Wurttemberg, Baden, Hesse, Mecklenburg-Schwerin, Anhalt, Hamburg, and Lubeck.<sup>1</sup> For the other 16 states the Imperial Statistical Office was the central station. The regulations of the Federal Council ordered that the government of these latter states see that the filled-out schedules, completely and carefully verified, reach the Imperial Office on time, and that the inquiries and after inquiries which the Imperial Office would have to make in connection with the tabulation be answered as quickly as possible.

The statistical bureau of Prussia, which state had more than three-fifths of the entire population of the Empire, was the largest central station; the smallest was in Lubeck, with sixteen one-hundredths of 1 per cent of the inhabitants of the Empire. The population tabulated by the Imperial Office amounted to but one-twelfth of the whole.

In the hands of these central authorities the census material was again subjected to a process of verification and revision. In the plan adopted by the Prussian bureau the first step was to ascertain that the material was complete. The county register was gone over to make sure that schedules for all communes and manors had been received. The commune schedules and enumerators' control lists were consulted to see whether the number of household and industrial schedules and agricultural cards corresponded to the

<sup>1</sup> It may be mentioned that there was, besides, one city—Munich—which likewise tabulated the returns for itself.

entries in these documents. An examination was then made to see whether the industrial schedules which were required by the entries in the household schedules had been filled out and returned. Then the contents of the inquiry schedules were inspected with reference to the completeness and consistency of the entries. Finally, on the basis of the results of this examination, the commune schedules and control lists were revised and corrected.

On the average for the Empire, then, the first stage of revision was made by the enumerators, the second by the local authorities, the third by the county authorities, the fourth by the central governmental statistical office. It was criticised severely as a deficiency of organization that three stages were designated without any clearer definition of what each really was to accomplish; that the result was merely a planless repetition with a considerable waste of time and money.

With the final verification of the schedules by the central authorities the census taking, that is, the collecting of the raw material for the publication, was terminated. The compilation followed. Although not centralized, it took place after wholly uniform principles.

#### BELGIUM.<sup>1</sup>

*Early industrial censuses.*—The first general industrial census in Belgium was taken as early as 1846, in connection with a population census.<sup>2</sup> The forms used at that time covered the following points: (1) Principal and secondary industry; (2) average number of workers by sex and age (under 9, 9 to 12, 12 to 16, and over 16 years); (3) classification of the children, the male, and the female workers by wages (9 groups from less than 50 centimes, or 10 cents, to more than 5 francs, or 96.5 cents, a day); (4) motors, machines, etc. The Belgian labor office considers that this census of 1846 "affords a substantial guarantee of exactness by the methods it followed, as well as by the care taken in the criticism of the results."

No general industrial census was taken in the following fifty years. The attempt in 1866 to take such a census in connection with the population census proved a failure, the returns being so deficient that the government preferred not to publish any results. Again, in 1880, an industrial census was planned<sup>3</sup> on

<sup>1</sup> The review of the previous industrial censuses in Belgium is based mainly on a paper of the chief of bureau in the Belgian labor office (Dr. Emile Waxweiler, *Die belgische Industrie-und Gewerbezahlungen von 1896*). This paper will appear in the *Allgemeine Statistische Archiv*, VI. Band, I. Halb., Prof. Dr. George von Mayr, editor of the "Archiv," has kindly furnished advance sheets of the paper.

<sup>2</sup> *Statistique de la Belgique: Industrie. Recensement général (15 X 1846) publié par le Ministre de l'intérieur: Brussels, 1851.*

<sup>3</sup> *Statistique de la Belgique: Industrie. Recensement de 1880 publié par le Ministre de l'intérieur et de l'Instruction publique: Brussels, 1887.*

the occasion of the celebration of the fiftieth anniversary of the independence of the Kingdom. The failure of the attempt in 1866 was attributed to undertaking too much, and this time the census was restricted to a number of selected industries, the workers of which amounted to about one-half of the total industrial workers of the country. This census was taken on December 31, in connection with the population census. The forms distributed to the heads of enterprises referred to the following points: (1) The personnel. Under this questions were asked, by means of a table, as to head of the concern, master, employer, directors, engineers, foremen, overseers, clerks, other salaried employees; workers over 16 years of age, from 14 to 16, from 12 to 14, under 12 years; apprentices over 16 years of age, from 14 to 16, from 12 to 14, under 12 years. The heads of the columns of the table were the following: Number of males, number of females; average duration in hours of day labor, of night labor; average daily wage of laborers in money, in natura (estimated in money); share of the profit; total wages; remarks. It also asked the average number of workers and apprentices for the working days of the year 1880. The other questions referred to (2) the motors and steam boilers (kind, power, construction); (3) the machines; (4) the yearly production by quantity and value. With regard to the returns of this census the statistical commission stated:

Of about 30,000 schedules distributed to the industrial persons many have come back not filled out, and most of the others furnished only incomplete, fantastic, and contradictory results. These schedules were sent back to the industrial persons, this time accompanied by a circular which should have made intelligible to them the purpose of the census, etc. By this means the bureau succeeded in inducing at least a certain number of persons to give wholly or in part the desired information. But the total result of this second investigation was still far short of the result desired. \* \* \* About 20,000 schedules, still deficient, were sent back to the communal authorities and delivered for the third time to the industrial persons, each accompanied by a written communication which stated the deficiencies, etc. No satisfactory result was reached through these labors which occupied four employees an entire year. The officer who had charge of editing and tabulating the returns then tried to profit from the good relations existing between himself and the manufacturers by making long and tiresome researches in the reports of the joint-stock companies, in industrial papers, etc. In spite of such persevering efforts it has been impossible to secure complete and exact facts, and it has been necessary to supplement a great number of schedules by comparisons and average figures.

Moreover, the returns of a number of industries were so incomplete that they were omitted altogether from the publication. For the same reason the returns regarding the machines were not utilized at all.

No other industrial census was taken until October 15, 1896.



It is this census which will be described in the following paper.<sup>1</sup>

#### THE INDUSTRIAL CENSUS OF 1896.

*Origin.*—When the question of taking an industrial and agricultural census in connection with the regular population census of 1890 came up for consideration, the central statistical commission,<sup>2</sup> having in mind the failure of the industrial census of 1880, unanimously declared that three or even two censuses should not be taken simultaneously. This opinion, which departed from the traditions of the Kingdom, was adopted by the minister of the interior, and it was resolved that, if there was to be an agricultural or industrial census, it should be taken separately and not in connection with the periodical general population census.

Nothing further was done in reference to the special censuses until 1894, when the Belgian Parliament suggested taking an agricultural census. The government, acting on this suggestion, ordered such a census for 1895, and on further consideration came to the conclusion that an industrial census was also necessary. The steadily growing importance of manufacturing industries in the Kingdom of Belgium made it more and more imperative to obtain, for the purposes of administration and legislation, a thorough insight into the conditions of these industries. The budget accordingly included an appropriation for an industrial as well as for an agricultural census. But before the plan for the former could be matured, an important change in the administration occurred. On April 12, 1895, the labor office was created, for the special purpose of examining the conditions of the working classes, and on May 25 it was annexed to the new ministry for industry and labor. The task of making preparations for the industrial census naturally devolved upon this office. The work was readily undertaken, the office being con-

vinced that a statistical knowledge of industrial conditions was the most important prerequisite of effective social legislation. A plan and a bill were drawn up and were submitted in the spring of 1896 to the central statistical commission, which referred the matter to a specially appointed subcommission. In this body the discussion of the industrial census was carried on for several months.<sup>3</sup> Meanwhile the census bill, accompanied by explanations, was submitted, on June 16, 1896, to the chamber of representatives<sup>4</sup> and adopted without change. It was also adopted by the senate,<sup>5</sup> and on June 29 the King declared it a law. In the meantime he had issued, on June 22, a "royal decree determining the principal regulations to be followed with regard to the census as well as the duties of the enumerators."

*The legislation for the census.*—The law of June 29, 1896, authorizing the census, was the following:

SEC. 1. A general census of the manufacturing industries and the handicrafts will be taken in 1896 under the chief direction of the minister of industry and labor, with the cooperation of the provincial and communal administrations, and, if necessary, of the various ministerial departments.

SEC. 2. The regulations to be observed in taking the census and the obligations of the individuals called upon to furnish the information deemed necessary, would be determined by royal decree.

SEC. 3. Any person who fails to perform the said obligations will be liable to a fine of from 1 to 25 francs and to imprisonment of from one to seven days or to only one of these penalties.

SEC. 4. In case individuals refuse to conform to the regulations, the authorities may enforce these regulations ex officio at the expense of the offenders.

These costs will be collected, if the case occurs, by the local administration, as are direct taxes.

In view of its cost the census was ordered by a law and not by a simple decree. But the law contained practically nothing regarding the date, the methods, or the scope. All these matters were left to be decided later by royal decree. The plan of the census was outlined, however, in the explanations accompanying the census bill.

*Scope of the census.*—The royal decree of June 22, 1896, stated that the object of the census was to secure information in regard to two general classes of data, the first (A) referring to the industrial establishments, the second (B) to the workers. The division was as follows:

#### *Division A.*

(1) The nature, number, geographical distribution, and date of foundation of the manufacturing and handicraft enterprises existing in Belgium; (2) the nature

<sup>1</sup> The report is based mainly upon oral information secured from Dr. Emile Waxweiler, chief of bureau in the Belgian labor office, who had charge of this census; upon his paper, *Die belgische Industrie-und Gewerbezahlung von 1896*, mentioned above; and upon the following documents issued by the Belgian ministry of industry and labor (labor office, division of statistics, general census of manufactures and handicrafts in 1896).

Arrêté royal déterminant les principales règles à suivre en vue du recensement ainsi que les obligations des recensés. Donné à Bruxelles, le 22 juillet 1896. (Annexe I: I. Feuille de dépouillement, Annexe II: Bulletin questionnaire A, Annexe III: Bulletin B.)

Circulaire A aux administrations provinciales et communales. Bruxelles, le 20 juillet 1896.

Circulaire B aux administrations communales. Bruxelles, le 20 juillet 1896.

Instructions pour les commis chargés de la confection des feuilles de dépouillement (Annexe: Liste des professions industrielles et métiers exercés par les chefs d'entreprise).

Instructions pour les commis chargés de la confection de Bulletin B.

Instructions pour les agents recenseurs.

Instructions pour les agents contrôleurs.

<sup>2</sup> There is no central statistical office in Belgium. Each department makes its statistics itself; the central statistical office is merely an advising body. A royal regulation of March 26, 1841, states in this regard: "The minister of the interior will communicate to his colleagues the views of the commission; they are free to adopt or to modify them."

<sup>3</sup> Cf. Ministère de l'Intérieur et de l'Instruction publique. Administration de la statistique générale. Bulletin de la commission de statistique. Tome XVII. Années: 1890 à 1896. Brussels, 1897.

<sup>4</sup> The chamber of representatives (chambre des députés) consists of a number of members, not to exceed one for every 40,000 inhabitants, elected for four years directly by general suffrage.

<sup>5</sup> The senate (sénat) consists of a number of members varying with the number of members of the chamber of representatives, elected for eight years, partly directly and partly indirectly.

of the products of the manufactures and handicrafts; (3) the number and position of the heads of enterprise; (4) the number of persons who participate in the direction, administration, and supervision; (5) the number of workmen and workwomen by age groups; (6) the usual daily duration of the work and of the periods of rest; (7) the amount of wages by special occupation, sex, and age; (8) the kind and number of motors used as well as the power of some of them; (9) the number and construction of steam boilers serving to produce the motive power, as well as their heating surface and pressure of steam.

#### *Division B.*

(10) The places where the laborers of the manufacturing industries and handicrafts dwell and those where they work; (11) the number and the composition of the families constituting a household of which one or several members are engaged as workers in the manufacturing industries and handicrafts; (12) the place and year of birth, the sex and conjugal condition of the workers, as well as of the members of their family belonging to the same household.

*The date.*—A law passed in 1856 provided that population censuses in Belgium should be taken every ten years. But it contained no provisions regarding agricultural and industrial censuses. In 1876 the population census was postponed until 1880 in order that it might enter into the decimal system. Reference has already been made to the industrial census of 1846 and to the attempts to take such a census in connection with the population censuses of 1866 and in 1880. It was not thought advisable to repeat this undertaking in connection with subsequent population censuses, but when the labor bureau was organized in 1895 it urged the taking of an industrial census as soon as possible, and it was accordingly decided to take such a census in 1896.

With regard to the season of the year, it was considered of fundamental importance to select a time when the great majority of industries are normally active. But for various reasons it was not thought best to choose the month of June, which is generally selected by other countries. In the first place it seemed hardly possible to complete the preparations by June of the current year, and the idea of a postponement to the year following did not meet with favor. Besides, this June of 1896 was unfavorable, because the elections took place then. It seemed, moreover, that in Belgium, at any rate, industries were in a more normal condition in October. A census taken in June would have had the disadvantage of omitting the important sugar industry, which in the months from October to December employs about 25,000 hands. Then there are many persons who, in October, after the termination of the agricultural work, seek a livelihood—sometimes, it is true, only temporarily—in some industrial

pursuit. In the country there are even industries which are regularly suspended during the harvest season, such as making of wooden shoes, and to some extent spinning and weaving. Still another reason was that the first Belgian industrial census of 1846 had been taken in October, and it was considered of interest to show the progress of the industries by a census taken just fifty years later. The exact date of the former census, October 15, was not, however, observed; and the date finally selected was October 31. The reason for postponing the census to the end of the month was to bring it as near as possible to All Saints' Day, a time at which the activity in the cloak and garment business, the milliners, tailor shops, etc., acquires a fresh impetus. On the other hand, it was not wise to go beyond the beginning of November, because by that time the slack season of the building trades sets in. The 31st was selected because it came on Sunday and, since the enumerators were obliged to call upon the workers themselves, it was especially easy to meet them in their homes then or on the following feast day.

*The administrative authorities.*—According to the law the census had to be taken under the direction of the minister of industry and labor, with the cooperation of the provincial and communal administrations and, if necessary, with that of the various ministerial departments. The minister accordingly was charged with the issue of further regulations and the entire direction. All the printed matter was furnished by that department. The census taking itself was done by the communes, with some slight supervision on the part of the governors of the provinces. The final verification of the schedules and the editing, classification, tabulation, and publication of the returns were centralized in the labor office belonging to the ministry of industry and labor.

#### I. PREPARATIONS.

*The division of the country.*—The Kingdom of Belgium is divided into 9 provinces (*départements*), headed by governors (*gouverneurs*). The 9 provinces are subdivided into about 2,000 communes, headed by mayors (*bourgmestres*). The territorial unit for the purposes of the census was the commune. The further subdivision of the country was left to the communal authorities.

As has been indicated, the census was: (1) A census of the establishments; (2) a census of the working population.

As these were taken independently of each other by a different personnel and on different schedules, they must be treated separately: (1) With regard to the census of the establishments, the royal decree ordered that the communal administrations, before September 25, 1896, more than five weeks before the census, were to divide their communes into enumera-

tion districts (circonscription), each containing not more than 50 heads of enterprises, as entered in the records of population. The circular A to the provincial and communal administrations—issued on July 20 by the ministry of industry and labor—added that in case of very important enterprises the enumeration districts were to be reduced to 40 or even 30 establishments. A list was to be sent not later than September 20 to the governor of the province, who would ascertain that no enumeration district contained more than 50 heads of enterprises, as entered in the population records. (2) With regard to the census of the workers, the royal decree directed that the communal administrations, before October 15, 1896, should divide the commune into enumeration districts, containing each not more than 100 "industrial households," as entered on the population records. The term "industrial households" included every family in which one or several members were engaged as workers in the manufactures and handicrafts, and also every worker in manufactures and handicrafts living alone or in a family of which he was not a member.

The formation of the enumeration districts was not originally made on a territorial basis, but with regard to both censuses the communal authorities were directed to group together the blanks copied from the population records relating, in the one case, to neighboring establishments, and, in the other, to neighboring industrial households. This was done so that the blanks referring to the same street in case of an important commune, or to the same neighborhood in case of a small commune, were arranged in the order of the house numbers. On the basis of the blanks thus arranged, enumeration districts with strictly limited boundaries were finally formed for both censuses.

*The distribution of forms.*—The royal decree stated that all printed forms necessary for the census would be furnished gratuitously to the communal administration by the ministry of industry and labor.

The communal authorities were to distribute these forms to the persons connected with the census taking and keep a record of the schedules as delivered.

*Financial preparations.*—An appropriation for an industrial census was included in the budget of 1895. This was intended to cover not only the cost of the work to be done at the central office, but all the other expenses of the census taking, no charges devolving upon any other body than the central government.

The total expenses amounted to about \$100,000.

*The organization of the staff.*—(a) The higher officers: The law provided that the census should be taken under the direction of the minister of industry and labor, with the cooperation of the provincial and communal administrations, and, if necessary, with that of the various ministerial departments.

(b) The enumerators: The selection of the enumerators devolved on the communes.

(1) As regards the census of the establishments, the royal decree ordered the communal administrations to appoint a sufficient number of educated and able enumerators (agents recenseurs) to insure the prompt execution of the work, making the selection as far as possible from among the communal clerks, the teachers, the retired officials, or other persons whose present or past pursuits would qualify them for the duties of the office.

As regards the remuneration the royal decree provided as follows:

(a) Twenty centimes (4 cents) for each schedule properly filled out.

(b) For the schedules referring to enterprises employing more than 50 workers the enumerator will be allowed a supplementary remuneration of 1 centime (0.2 cent) for every ten workers enumerated above 50; but the total remuneration shall not exceed 2 francs (38.6 cents) per schedule.

These rates were sometimes even doubled in order to secure able enumerators.

(2) With regard to the census of the "industrial households," the royal decree ordered the communal administrations to designate as agents (agents contrôleurs) "educated and able persons, chosen, preferably, from among those who best know the commune or certain sections of the same."

The rates of remuneration as provided in the royal decree were as follows:

(a) Five centimes (1 cent) for each properly filled out schedule referring to industrial families or workers residing in the agglomerated parts of the communes or living in places the population of which exceeded 5,000 inhabitants on December 31, 1895.

(b) Ten centimes (2 cents) for all other schedules.

They were allowed, in addition, 2 cents for each "industrial household" not entered on the population records.

Special instructions were issued to the enumerators of the census of establishments and to the agents of the census of "industrial households." The royal decree stated that the enumerators and agents were to study the instructions carefully and, if any point seemed obscure, to ask immediately for explanations.

*Measures for increasing the reliability of the census.*—The main inducement offered for a thorough enumeration was payment by piece. In the instructions the attention of the enumerators and agents was especially called to the fact that they were thus personally interested in canvassing their district with great care, and that in case they delivered schedules incompletely or insufficiently filled out, their remuneration would be entirely or partially withheld.

To guarantee the trustworthiness of the individual canvass, measures were taken to allay possible suspicions on the part of the people, to instruct them properly, and to define their legal obligation to answer the

questions. As regards the first point the schedule delivered at the establishments began with the following observation:

The present industrial census is merely a repetition of the operations of the same kind effected in 1846, in 1866, and in 1880.

Its purpose is to make known the principal industrial conditions. It is not connected with any definite project of regulation or with any fiscal measure.

The question referring to the products was accompanied by the special remark designed to awaken even the interest of the heads of enterprises:

Independently of the interest attaching to a knowledge of the products of the national industry, this question is put with the view of furnishing information to the Belgian consuls abroad and of thus favoring the exportation of Belgian products.

With the same object in view the instructions to the enumerators contained the following detailed directions regarding the treatment of the heads of enterprises:

You will explain to the head of the enterprise with the greatest courtesy the object of your visit; you will explain to him also that the purpose of the census is to secure general information of the manufactures and handicrafts; that similar censuses have already taken place in 1846, in 1860, and in 1880; that an agricultural census has just been taken some months ago; that in the other countries censuses of this kind take place periodically; and that it is in consequence of much interest for Belgian industry now to make itself known abroad.

Many persons imagine that their declarations will be published with statement of their name, occupation, etc. It is important that you dispel this mistaken idea: Only totals will be published, all the establishments of the same industry being grouped and intermixed, so that no one among them will be recognizable. You will, furthermore, add that the schedules properly filled out will be put by you in a closed envelope when you come to collect them. You will especially insist on the following: The census refers to no predetermined project or regulation of manufactures and handicrafts, nor to any project of taxation. The object is simply to know exactly the actual condition of the Belgian industry as the actual condition of the agriculture is already known.

You will do well to provide yourself with the present instructions, in order to be able, if necessary, to read the preceding section in case you meet heads of enterprises little disposed to answer the schedule.

The royal decree added:

It is expressly forbidden to the enumerators to divulge the information which they have obtained during their commission.

There was, however, no legal means to punish an enumerator who might disregard this order.

The only measure taken to allay suspicions in the "industrial households" is contained in the following article of the royal decree:

The agents will summarily state the purpose of their calling, insisting on the fact that it does not refer to any fiscal or police measure.

Nor was any special measure taken for the instruction of these "industrial households." This was hardly necessary, since the agents had to fill out the schedules themselves.

As regards the census of establishments, however, the schedules contained a number of explanations, and

the enumerators, moreover, received detailed directions about instructing the heads of enterprises who were to fill out these schedules. In case anyone desired a schedule edited in Flemish, the enumerators were instructed to secure such at the city hall.

With regard to the obligation to answer the questions, section 3 of the census law said that those persons who failed to perform the duty of furnishing the information required from them would be subject to a fine of from 19.3 cents to \$4.82 and to imprisonment of from one to seven days, or to one of these penalties.

The royal decree said with regard to the census of establishments:

The heads of enterprises are bound to fill out faithfully and accurately the schedules which will be delivered to them.

They had to certify to this at the bottom of the schedule.

The general observations printed at the beginning of these schedules quoted the provisions of the law in regard to penalties for refusing to answer; but the enumerators were instructed not to refer to these penalties except as a last resort.

It will be remembered that the census law provided that in cases of refusal to comply with the law, its provision might be executed ex officio by the authorities and at the expense of the offenders, the costs to be collected by the local administration, as in case of direct taxes.

Circular A describes in detail the procedure to be followed in such cases:

In case the enumerator declares that a head of enterprise refuses to fill out the Schedule A, the communal administration will delegate an agent of the local police to accompany the enumerator to the head of enterprise in question and to deliver to the latter, in case he persists in his refusal, a verbal protest. This protest will be transmitted to the court with the least possible delay. Then the communal administration will proceed to an investigation with a view to gathering the necessary information so as to fill out the schedule for the offending head of enterprise.

This one will, according to article 4 of the law of June 29, 1896, bear the expenses of this investigation and those caused by the making out of the Schedule A.

Circular B contained a similar statement in regard to refusals on the part of the head of an "industrial household," but, foreseeing that the agent might himself be an agent of the local police, it added that in this case he himself might draw up the verbal process.

As a matter of fact, these penalties were never imposed.

*Preliminary investigations.*—The preliminary investigations formed the most important feature of the preparations for both censuses. They were based upon the population records (registres de la population).

## II. THE ENUMERATION.

*The unit of the census.*—The census originally planned by the labor office was intended to be a census of the manufacturing and handicraft concerns. But

the desire to secure information about the social conditions of the industrial working population, especially the size of their families, etc., made it necessary to take at the same time a census of the industrial working population. The consequence was that the census, as a whole, was constructed upon a double basis: (1) The independent industrial concern; and (2) the "industrial household"—that is, the household including dependent industrial workers. It will, therefore, be necessary to show (a) what was to be considered as "industrial," both in the census of the concerns and of the households; (b) what was to be considered as "independent" in the former and, consequently, as "dependent" in the latter; and (c) what was to be considered as "concern" and what as "household."

(a) The law authorizing the census states that it was to cover the manufactures and handicrafts. According to the royal decree, industrial establishments were those which effected the preparation or production or distribution of goods or services for an outside consumer. This definition was intended to include not only the manufactures and handicrafts, as prescribed in the law, but also transportation. On the other hand, such occupations as street cleaning, the public lighting service, the burial of the dead, the maintaining of streets and canals, the posting of bills, etc., were excluded since these industries did not aim at the transfer, preparation, or production of goods. Since only those establishments were to be considered as industrial which worked for an outside consumer, workshops, shops, etc., where electricity was produced for use on the owner's premises were not to be enumerated as electric concerns. The same was true of a bakery run exclusively for the use of a cloister, a hospice, a barracks, or coal works, and of the painters, joiners, or tin workers employed exclusively for maintaining the buildings connected with public administrations (communes, provinces, ministries, etc.). Establishments such as the royal gun foundry, which furnishes guns exclusively for the state, were also excluded. It was evident, on the other hand, that gas or electric enterprises conducted by the commune were to be included.

On the whole, the definition in the royal decree was followed, but this was not always the case. The minister of railways resisted the investigation of the governmental railways, which without doubt should have been included. Again, the idea of including only those concerns which were conducted on purely economic principles led to other deviations. Those cloisters, industrial schools, governmental charity colonies, prisons, and almshouses in which goods were prepared for an outside consumer should, according to the definition, have been included, but the labor office judged that as these institutions were conducted under peculiar conditions and not as purely economic enterprises, they would, if included in the census and enumerated

together with other establishments of the same industry, furnish totals not composed of comparable units.

The labor office, moreover, starting with the idea that it would be wiser to comprehend in the census taking itself all doubtful cases and leave the question of their ultimate inclusion to be decided at the tabulation of the data collected, gave the enumerators only very broad and vague instructions. It simply ordered that all the "mines, works, factories, yards, or workshops—in one word, all the industrial enterprises"—were to be enumerated, calling the attention of the enumerators especially to the fact that all the "carriage hirers, mail coach or public carriage managers, etc.," were to be enumerated, transportation being considered an industry. The rule was followed for establishments, whether at work or idle.

The fact that analogous economic criteria were appealed to in deciding the question whether a worker was to be considered "industrial," led to the inclusion of a large number of workers whose employers were not enumerated in the census of establishments. That was true not only for all those who worked at home for the account of persons not industrial, but also, for example, for engineers operating the steam boiler used in the illumination of a large restaurant, etc. The labor office here adopted the theory that this engineer, with regard to his social condition and occupation, differed in nothing from the engineer of a weaving mill, both belonging, perhaps, to the same trade union, to the same sick union, etc. Thus all the manufacturing workers and dependent artisans had to be included, regardless of the economic condition of their employer.

(b) With regard to the distinction between the heads of enterprises, the "independent" persons, and the workers, the "dependent" persons, the first of whom were to be enumerated in the census of the establishments, the second in the census of the "industrial households," the royal decree states:

The head of an enterprise is one who with his own implements works either alone or with the cooperation of persons paid by him.

The worker is one who by virtue of an expressed or understood contract furnishes his services to a head of enterprise for a salary.

As heads of enterprises and "independent" had also to be considered those who, as seamstresses, tailors, masons, slaters, carpenters, etc., worked for daily wages in the houses of private customers.

All persons who at home worked for the account of another, however large might be their business, were considered dependent.

The instructions to the agents expressly called their attention to the fact that the foremen were to be considered as workers.

(c) With regard to the unit constituting a concern, it was ordered that in case different industries were carried on in one establishment, or if the establishment had "several subdivisions which might exist separately," each of the different industrial subdivisions

which, "owing to its importance, might form a separate establishment," was to be considered as one unit.

The explanations for the filling out of the schedules attempted to indicate how this was to be understood by giving the following example:

In the typolithographic industry will be considered as subdivisions: (1) Printing; (2) lithographing (including copper plate engraving, engraving on stone, autographing as well as zincographing); (3) chromolithographing (including chromozincographing); and (4) the workshops where special processes are carried on, such as phototyping, photoengraving, helioengraving, chromotypographing, etc. In case, however, the importance of these workshops is slight, they will be assigned to that of the first three subdivisions with which they have the closest relations.

This single example could by no means help to clear up the interpretation of the very vague general rule. At the same time it shows best, perhaps, the difficulty of the task devolving upon the enumerator and enumerated, and the scope left to arbitrary decisions. The need of explicit directions was all the greater, as the enumerators being paid by unit (establishment schedule) had an interest in carrying the subdivision as far as possible. The consequence was that at some places the number of concerns (schedules) had grown enormously, while at other places the subdivision of the establishments into separate concerns had not been carried far enough. Sometimes, for instance, the number of painters who were separately counted as glaziers was very large; sometimes only painters were counted and no glaziers. Thus confusion resulted, and it was only at the revision in the central office that the proper unit could be restored.

By reason of the fact that each of the subdivisions of an establishment rather than the entire concern was to be considered as a unit, all the industrial subdivisions of commercial enterprises were to be enumerated. The enumerators, as will be seen later on, were especially exhorted not to omit these.<sup>1</sup>

*The finding of the units.*—Since the previous industrial censuses in Belgium had been taken in connection with general population censuses, the methods of discovering the industrial units were closely connected with the methods of finding out the individual inhabitants. When the new special industrial census came to be considered, it was at first proposed to take a summary population census to determine both the heads of the enterprises and the workers' families, and then take the census proper by delivering special schedules

<sup>1</sup> At the tabulation, however, the labor office decided to exclude as a matter of principle all industrial activity which is generally performed only accessorially to commerce: for instance, slaughtering, which is generally associated with the commercial business of the butchers; the repairing of watches and jewels, generally closely connected with the business of watch sellers and jewelers; the mending of umbrellas and hats, which also is generally done in the corresponding retail shops, etc. It is believed that since in general the census was not to include commerce it would be impossible in practice to include all the industrial activities of those industries, and that the including of these few cases where the industrial work is done separately from the commercial business would only give a false picture of the real conditions.

to both these classes. This plan, however, involving practically the taking of a general population census, was given up for administrative and financial reasons. The idea then arose of using the returns of the population census of 1890 and grafting an industrial census upon them. The schedules, however, could not be found in the department of the interior, which had charge of the census. Thereupon resort was had to the local population records, which contained all the necessary data of the last population census.

(1) The main basis, then, for the census of establishments was the "preparatory blanks," copied from the population records, in which the name, occupation, and residence of the persons classified in these records as industrial masters were entered by clerks appointed for that purpose, who also attempted to supply from personal knowledge the place of the establishment if it was separated from the manager's residence. But at the same time the enumerators also received special instructions for the discovery of those concerns for which blanks had not been made out. This comprised cases in which owners of establishments had not been entered at all in the population records, or had been entered under wrong designations or as commercial persons because their main business was a commercial one, although a subdivision of their establishments was devoted to a manufacturing activity. The instructions say briefly on this point:

By examining your preparatory blanks you will see what streets or what sections of commune are assigned to you.

Provided with these blanks you will make in the streets of your enumeration districts a preparatory tour, which is very important from the standpoint of the exactness of the results of the census.

It can happen, indeed, that workshops, perhaps even factories, do not appear on the preparatory blanks remitted to you, although they are situated in your enumeration district. It is intended by the preparatory tour to find out these establishments. In order to discover them, you must observe that a small workshop or a master working at home, even without workers, are to be enumerated as well as a large mill.

You will then carefully observe each dwelling place, and notice whether signs, plates on the doors, fashion plates, or announcements placed against the windows, at the ground floor, or an upper floor, etc., do not indicate that there lives in the house a person (man or woman, boy or girl) carrying on an industry or a handicraft on his own account. You will ascertain each time whether you have a corresponding blank. If not, you will note the address, so as to be able to call there later on.

Notice that it need not necessarily be the head of the family who carries on the industry. You will, for instance, note also a house where the wife is tailoress and the husband official, or a house where the son is shoemaker on his own account, the father being shopkeeper, etc.

You will further note the persons who, while keeping a shop or public house, carry on besides an industry on their own account.

It frequently occurs, especially in the cities, that a workshop is accessory to a store or shop. For instance, linen goods, clothing, millinery, hat, and shoe and stocking shops, etc., may employ workmen or workwomen; a merchant in household goods may be at the same time a lead and zinc worker; a jeweler and fancy goods shop may have a workshop where artistic work or repairing is done; a



furniture shop may possess as an annex a workshop where furniture is manufactured, etc. When you come upon shops of this kind, you will inform yourself by entering whether manufacture or handicraft is carried on within. In case it is, you will note the address.

The success of this preparatory tour, which depended entirely upon the zeal of the enumerators, varied very much in the different districts. The total number of preparatory blanks made out for 68 larger communes (each with more than 10,000 inhabitants) amounted to 59,633. The enumerators discovered 5,289, or 8.9 per cent, more concerns. In the city of Brussels, however, where an especially large number of additional concerns might have been expected, not one single concern was found by the enumerators.

(2) With regard to the census of the "industrial households," the entries in the population records referring to the name, sex, place and year of birth, conjugal condition, relationship to the head of the household, and occupation of all the members of an industrial household were transcribed to Schedule B, which was then used in taking the census proper. Accordingly the agent by whom the census was taken received these schedules partially filled out. The instructions to the agents merely stated that an agent in going through the streets assigned would perhaps find "industrial households" for which no schedules had been delivered, and that in such cases he was to make out a schedule himself. He was reminded that he was personally interested in making these researches very carefully, as his reward would be higher for the forms of those households which he discovered himself.

This appeal, however, had not the desired effect, probably because the additional reward did not pay for the trouble of making a research for unknown "industrial households," and it seems that a considerable number of them were actually omitted.

*The method of canvassing.*—The schedule used in the census of the establishments was a book of 28 pages printed on 17 pages. At the head of each odd page was a rectangle containing the individualizing statement as to province, administrative district, commune, and number of preparatory blank. On the page referring to the habitual duration of labor and rest the rectangle required, besides, the entry of the street and house number of the concern. The first two pages contained general observations. The inquiries were divided into 7 sections, the first section, which asked the general information, being divided into 14 inquiries, each requiring a direct answer. The 5 sections referring to the personnel, the habitual duration of the daily labor and of the periods of rest, the wages, the motors, and the steam boilers, were to be answered in very elaborate tables, only one of which was accompanied by a model filled out. No form was prescribed for the section containing the inquiry concerning products, and the last section was reserved for remarks. The explanations

for the filling out of the schedules were printed as notes to the individual points.

*Observations as to general census of manufactures and handicrafts in 1896.*—The present industrial census is merely a repetition of the operations of the same kind effected in 1846, in 1866, and in 1880. Its purpose is to make known the principal conditions of the industry. It is not connected with any determined project of regulation or with any fiscal measure.

One schedule can include only the information regarding one single industry. In case different industries are carried on in one establishment, or if the establishment has subdivisions, as many schedules must be used as there are different industries or subdivisions. With regard to mines and underground quarries, one schedule will be used for the underground work and another for the surface work.

In case the establishment is in operation at the date of the census, the information furnished must correspond to the conditions existing at that date; in case it happens to be idle, the information will be given for the period of operation nearest to that of the census. If the head of the enterprise considers that the conditions at the date of the census are not normal, he will mention this circumstance in his answers, under the final rubric of "remarks." He will indicate at the same time and at the same place in a summary manner what would be the normal condition with regard to the different points touched by the schedule—for instance, the number of workmen or workwomen, the duration of the work and of the rests, the wage rates, etc.

In case the establishment is not in operation at the date of the census and the shut down is not purely accidental, the information furnished will relate to the normal condition of the establishment when in operation.

The head of the enterprise, authorized representative, director, or manager who refuses to answer this schedule or who does not fill it out faithfully and accurately exposes himself to the penalties provided by article 3 of the law of June 29, 1896, as follows: "Any person who fails to perform the said obligations will be subject to a fine of from 1 to 25 francs and to imprisonment of from one to seven days or to only one of these penalties."

*The inquiries.*—The schedule of Inquiry A asked for each establishment (1) the kind of ownership (whether the concern was conducted by the state, province, commune, an individual, or a joint-stock company, etc.); (2) the full name of the head of enterprise or manager; (3) his residence; (4) the principal or only industry; (5) the other industries or occupations, if any; (6) the situation of the principal and of the other establishments; (7) the name of the principal and of the other establishments; (8) the name,

nature, and situation of the subdivision of the establishments under consideration; (9) the date of foundation of the entire establishment and that of the subdivision in question; (10) whether the concern was actually in operation; (11) if it were, whether the operation was normal; (12) if shut down, the cause; (13) in case the operation was intermittent, the periods of work; (14) the number of days generally in operation per year; (15) the personnel by number, sex, and position (heads of enterprise, directors, superintendents, foremen, office employees, other salaried employees, workers, including apprentices) and by age; (16) the habitual duration of the daily labor and of the periods of rest of the workers by time of work (by day exclusively, by night exclusively, partly by day and partly by night), by special occupation, sex, age; (17) the wages of the workers by special occupation, age, and sex, and by kind of payment (by day, hour, piece, job, contract, etc.) and kind of wages (premiums, shares of profits, etc.); (18) the product of the concern; (19) the nature and horsepower of the motors; (20) the system, the ordinary and maximum pressure of the steam and the heating pressure of the steam, and the heating surface of the steam boiler.

In addition to notes intended to explain to the heads of enterprises the meaning of some of the questions, detailed explanations were contained in the instructions to the enumerators to verify the preliminary entries; to complete these by filling out the schedule completely; to ascertain whether there were at the time of the census any members of the families of the workers living in the common household who had not been entered on the schedules, and, if so, to fill out schedules; to ascertain whether there were any persons entered on the schedules who did not live in the families, and, if so, to scratch out their name and the other entries made for them; and to discover at the same time those "industrial households" for which no schedule at all had been made out.

The enumerators also were instructed to verify with special care the statements in regard to occupations—making sure that the persons were workers in manufactures and handicrafts, and ascertaining and entering the precise nature of their occupation in case it was not already stated with sufficient explicitness.

### III. THE REVISION.

*By the enumerators.*—According to the royal decree, the enumerators of the census of the establishments were to collect the schedules between November 5 and 7, to ascertain that the entries were properly made, and to have the deficient schedules filled out by the heads of enterprises. The schedules were to be put in an envelope bearing the name of the enumerator, that of the head of the enterprise, and the corresponding number of the preparatory blank. These were sealed by

the enumerator in the presence of the head of the enterprise and immediately delivered, together with the preparatory blanks, to the communal authority.

*By the local authorities.*—The verification to be done by the communes was, on the whole, only formal. This was especially true for the census of the establishments.

(1) The communal authorities, after having given a receipt to the enumerators for the envelopes delivered, had to ascertain whether all the heads of enterprises entered on the preparatory blanks had delivered their schedules, and were to require the enumerator to take the necessary steps to supply any schedule that might be lacking. If an enumerator declared that the head of an enterprise refused to fill out a schedule, he was to bring charge against the offender.

(2) With regard to the census of the industrial households, the communal authorities were to ascertain, by means of the records kept of the delivery of the schedules to the agents, whether all had been returned; to examine whether the schedules had been properly verified and completed; to secure lacking schedules, if required; to rectify and complete deficient ones; and, if necessary, to bring charges against the head of a working family refusing to make the necessary statements. In case a schedule was deficient on account of the change of residence, the communal administration transferred it to the agent of the enumeration district to which the family or worker had removed.

*By the central authorities.*—After the material had reached the department of industry and labor, it was transferred to the labor office, which had to effect the central revision. The work consisted (a) in finding out those concerns and "industrial households" for which a schedule had erroneously not been made out; (b) in finding out those concerns for which erroneously more than one schedule had been made out; (c) in a verification of the contents of the schedules, which suggested the revision of the entire material of some industries; and (d) in additional and sometimes very comprehensive researches, surpassing in some respects the original scope of the census, and thus representing special investigations grafted upon the original returns.

The success which attended the general revision suggested the idea of securing, on the basis of the returns of the census, statistics of the domestic or house industry. The execution of this plan necessitated the return of 10,000 Schedules A. Three agents with one chief reviser were occupied during seven months at this extra revision. A further special verification was found necessary, when, after the revision of all schedules, the classification of the industries was undertaken.<sup>1</sup> Finally an attempt was made to supply the

<sup>1</sup> It may be noted that no preconceived plan of classifying the industries was adopted. The classification of the industries was made on the basis of the knowledge of the industrial conditions gained at the census and only fixed after the whole material had been revised.



wage statistics for groups of workers secured through the census by a statement of the wages of all the individual workers of the entire country. Two means were adopted for this purpose: A number of Schedules A were returned with very detailed notes to the heads especially of small enterprises; and one special agent, a former manufacturer, visited every large establishment in the country, securing the individual wages from the lists of 1896 kept by the employers. When the special agent had completed this trip, which took three years, the whole work of revision was terminated.

## DENMARK.

*Early industrial censuses.*—The first attempt to take a general manufacturing census in Denmark was made in 1871. The government desired that complete manufacturing statistics should be prepared by the Royal Danish Statistical Bureau as a basis for proposed changes in the customs laws. The chief of the bureau, however, had great misgivings about putting such a work into execution. An enumeration of the factories and of handicrafts carried on in the manner of a factory had already been undertaken in that year, for the purpose of showing the development of industries in the towns and places of trade since the crisis of 1857; so the government contented itself with supplementing this by a corresponding enumeration in Copenhagen and the rural districts. For every single branch of industry information was secured regarding the number of factories, the year of their foundation, and the number of their laborers. In 1882 a census of manufactures in Copenhagen was taken by a local statistical bureau. But the first general industrial census in Denmark was taken in 1897. This is the one which forms the subject of the following study:

## THE INDUSTRIAL CENSUS OF 1897.

*Origin.*—The desire for a general manufacturing census, which had been steadily increasing during two decades previous to 1897, was even expressed by the manufacturers themselves. In August, 1895, the joint representatives of the Danish handicrafts and manufacturing industries submitted a memorial requesting the ministry of the finances to take the initiative in the preparation of complete and careful statistics of industries, or at least of manufacturing industries. The matter received the attention of the newly reorganized governmental statistical bureau, and on October 16, 1896, the ministry of finances introduced in the lower house of the Danish parliament<sup>1</sup> a bill providing for a handicraft and manufacturing census in the year 1897. This bill was approved by the Diet and proclaimed a law on March 22, 1897. On April 1, 1897, a circular,

referring to the taking of the census, was issued by the ministry of the interior to all the head officials of the rural districts and to all the chiefs of the provincial towns; and a communication of a similar content was delivered to the magistrate of Copenhagen.

*The legislation for the census.*—The law provided that the census should embrace all the independent mechanics and manufacturers, and also those persons for whom any handicraft or manufacture formed a secondary source of profit or afforded a part of their livelihood. Joint-stock companies or corporations carrying on the classes of industry mentioned were to be treated as persons, and manufacturing concerns of the state or commune were also to be included.

Section 3 of the law read as follows:

The census shall be taken through the filling out of enumeration schedules, which will be prepared by the governmental statistical bureau and which must be approved by the ministry of the interior. They shall contain nothing about the conduct or net proceeds of the business, but may contain questions concerning such external conditions as the number, sex, and age of laborers, or the number and kind of motor engines, together with further questions about the wages paid, and the gross quantity and gross value of products. The last-named questions and the questions about machines must also be answered if, outside of the schedules, they are put by the factory inspectors, appointed with reference to law No. 56 of April 12, 1899, to the handicraft and manufacturing concerns subject to their inspection or to concerns of a factory-like character corresponding to those embraced by the factory inspection.

It was provided that the schedules should be distributed and collected by the local authorities in accordance with the more detailed regulations of the ministry of the interior.

A fine of from 2 to 20 crowns could be imposed for refusing to answer the questions put in the schedule or by the factory inspection, in conformity with section 3, or for giving notoriously wrong information, or otherwise intentionally ignoring the requirements stated in the schedule or by the factory inspection. Moreover, the authorities could, if necessary, enforce the delivery of the requested information by imposing daily fines of from 2 to 20 crowns.

It appears, then, that the law contained a few statements about the methods and the plan of the census, and also some indications as to its extent. But while the government thus reserved to itself the decision of the most important points, it plainly indicated to parliament its intentions in the detailed commentary accompanying the bill.

*Scope of the census.*—The determination of the special scope of the census gave rise to great difficulties. The government did not consider it necessary, nor, on account of the limits in time, money, and forces, practical to make the census for all the industries at once. It was pointed out in the commentary on the bill that foreign industrial censuses, even when very comprehensive, did not include everything. Some of the principal industries were omitted and reserved for special investigation. This was considered the more reasonable

<sup>1</sup> The Diet (Rigsdag) comprises an upper house (Landsting) numbering 66 members, 12 of whom are nominated for life by the Crown, the other 54 being elected indirectly by the people for the term of eight years; and a lower house (Folketing) consisting of 114 members, directly elected by universal suffrage for the term of three years.

for Denmark, because, in the field of other industries than the manufacturing, valuable statistical material was already at hand.

Accordingly it was decided that the census should be merely an investigation of the handicraft and manufacturing industries. Moreover, the idea of taking a general occupation census, as a method of getting at the industrial concerns to be enumerated, was likewise rejected. On this point the commentary on the bill says:

It is clear enough that a handicraft and manufacturing census can not procure information about all the laborers who work in the service of handicrafts and manufactures, since only those will be enumerated who at the time work for employers. What will in fact be ascertained is principally the number of concerns and trades, the large and the small, those with and those without mechanical motive power, and so on. Investigations of the total number of laborers can only be made through enumerations of the individuals—that is, population censuses. It should be observed that even if such a census is taken at the same time as a manufacturing census it can not be expected that the numbers will correspond with each other, for the reason that the laborers are not usually entered under the same designation by both themselves and their employers, and the same laborer might work for several concerns. Even in Germany such a conformity was not expected in spite of the great apparatus which had been put into operation. It is doubtful, moreover, whether a part of the domestic industrial activity in the form of the helpers' assistance and the labor of persons who do not work immediately for a master (independent business man) will not also be omitted. But an investigation having in view data regarding the importance of the house industry, even if the attempt should be made to secure information through the manufacturing census, can, beyond a doubt, only be undertaken by way of an "enquête" or individual investigation of those industries in which domestic industry bears some part. This is the method that has been followed in foreign countries when it was especially desired to get to the bottom of these conditions.

*Drafting of the plan.*—With regard to the drafting of the plan, the law decreed that the schedules should be prepared in the statistical bureau and approved by the ministry of the interior. Before being delivered to the ministry for approval the schedules designed in the statistical bureau were submitted to the factory inspection, with which the bureau had entered into negotiation for assistance in the census taking.

*The date.*—Since the census was the first of its kind, there was no precedent for taking it in any particular year. The year chosen was the first after the newly organized statistical bureau could draw a plan.

The law begins with the statement that the census was to be taken in the year 1897. The comments accompanying the bill add:

The census is expected to be taken in 1897, and, as far as possible, in the second half of the month of May, at which time the handicrafts and manufactures, with few exceptions, are in full activity all over the country. A definite day will be determined upon. The information to be secured through the factory inspection will be asked for in the course of the next month after the enumeration.<sup>1</sup>

The date finally selected was May 25.

<sup>1</sup> It was later decided that this investigation should be made between June and October.

*The authorities.*—The census was entirely centralized in the government at Copenhagen. The forms were furnished by the governmental statistical bureau belonging to the ministry of finances. The census was to be taken partly by the communes, according to instructions issued by the minister of the interior, and partly by the factory inspection. The work of revising and tabulating the material was to be done in the governmental statistical bureau, assisted by the factory inspection. The publication of the results devolved upon the bureau. In the parishes the taking of the census was to be under the direction of the parish boards (Sogneraadene). In those rural districts which as regards charities and schools belonged to towns the governing body (district board, Bestyrelse, Distriktsraad) was to have charge of the work; in the towns, the town council (Byraad); and in places of trade, the communal governing body (Kommunalbestyrelse).

#### I. IMMEDIATE PREPARATIONS.

*The division of the country.*—According to the provisions of the census law the census was to be taken for the Kingdom of Denmark, which includes the Faroe Islands,<sup>2</sup> but as it proved too difficult to extend the enumeration to these islands, the census was in the end confined to Denmark proper.

*The distribution of the forms.*—The census law provided that the schedules be furnished by the statistical bureau. The printing was therefore centralized and performed in one private office. The law also stated that the further distribution of the schedules should be performed by the authorities according to more detailed regulations of the ministry of the interior. These regulations provided that the necessary number of schedules should be sent to the head officials of the counties. As it was added that the chairman of the local boards in the rural districts and the police stations in the towns were to keep in readiness a number of copies for possible need, it is to be presumed that this excess was included in the number of schedules the bureau judged necessary.

*Financial preparations.*—The sum appropriated by the census law to cover expenses incurred by the governmental statistical bureau for the enumeration, the printing of the schedules, technical assistance, including that of the factory inspection, and the tabulation of the material, was 12,000 crowns, or \$3,216—8,000 crowns, or \$2,144, for the fiscal year 1897–98 and 4,000 crowns, or \$1,072, for 1898–99.

The remarks on that section of the bill say:

While for the last population census about 30,000 crowns, or \$8,040, have been spent, it is conjectured that this special census, in spite of its comprehensive character, can, in view of the increased forces of the bureau, be effected for the sum of 12,000 crowns,

<sup>2</sup> The Faroe Islands are 22 in number, 17 of which are inhabited. They constitute a royal county and are represented in the Danish Diet.

or \$3,216. This amount is arrived at by an accurate calculation of the expenses for the printing and the paper of the schedules, for which it is assumed that at least a third of the whole amount will be spent. Out of the remaining two-thirds shall be paid the expenses partly for the assistance of the subordinate personnel of the factory inspection and partly for the extra work in the two years which the tabulation is assumed to occupy, without which extra work it could not be accomplished.

*The organization of the staff.*—(a) The higher officers: The census law contained the indefinite statement that the census was to be taken by the authorities, adding that the details would be regulated by the ministry of the interior. It mentioned, however, the assistance of the factory inspectors.

The remarks accompanying the census bill stated that the statistical bureau had applied to the factory inspection for its support and had received a favorable reply.<sup>1</sup>

By the circulars of April 1 the local boards were directed to provide for the distribution of the schedules to the industrial persons.<sup>2</sup>

(b) The enumerators: The choice of the enumerators was left to the communes. The only requirement in the circulars of April 1 was that in the rural districts the parish boards should elect as enumerators trustworthy men fit to instruct the industrial persons regarding the filling out of the schedules. In the towns and places of trade the distribution and collection of the schedules was to be made by taxgatherers, policemen, or such other communal functionaries as were naturally best adapted for this work.

The enumerators did not receive any pay. Men chosen by the communal authorities were obliged to accept the office. That was the case in the towns, where officers were charged with the canvassing, as well as in the rural communes, where mostly private persons performed the duty.<sup>3</sup>

*The instruction of the staff.*—Neither the census law, the explanations accompanying the census bill, nor the circulars issued to the head officials of the counties contained any indication of the manner in which the enumerators were to be instructed. This was left entirely to the communal authorities.<sup>4</sup>

*Measures for increasing the trustworthiness of the census.*—No general precautions were taken in order to make the population more stable or to increase in any other general way the reliability of the census taking.

<sup>1</sup> This assistance of the factory inspection was originally planned on a rather large scale, as indicated in the census law, section 3. For practical reasons, however, the special factory statistics to be made by the factory inspection were not extended, as provided in the law, to those establishments of a factory-like character which were not subject to the factory inspection. As the supplementary census to be made by the factory inspection had then to cover only 4,005 factories, or 5.2 per cent of the total manufacturing and handicraft concerns, the methods of that census will be referred to only in a few footnotes.

<sup>2</sup> The information about the governmental industrial concerns was to be directly returned by the governmental authorities.

<sup>3</sup> The investigation left to the factory inspection was performed by the assistants of the factory inspectors.

<sup>4</sup> The assistants of the factory inspectors received very detailed instruction prepared for that purpose.

Here, again, it was left to the communes to awaken the conscientiousness and zeal of the enumerators, who were not obliged to take any oath before entering upon their duties.

The census law contained one provision which was calculated to allay suspicion on the part of the public. It stated that the schedules should not contain any question concerning the conduct of a business or its net proceeds, but that they should be restricted to questions about such external conditions as the number, sex, and age of the laborers, the quantity and kind of motor engines, the machines, the wages paid, and the gross quantity and gross value of the product. After a description of the subjects of the individual rubrics in the draft of the schedule, the remarks accompanying the census bill state in this connection:

With regard to these rubrics perhaps some hesitation might arise on account of the question of wages. But no information is required here which an employer would have any intelligible reason for wishing to conceal. The statistical knowledge reached through the information is, indeed, limited—the question referring only to the wages of one week, and being asked only for class groups of laborers. Reliable wage statistics possess interest for the employer as well as for the laborer—as is shown by the reviews of wages prepared several times by the statistical bureau of Copenhagen—and a presentation of the income of the laborers can not be furnished without the additional knowledge of the extent of time unemployed. The material which may come in through the schedules, therefore, can not be used immediately for a presentation of average wages in the different branches, much less for a statement of the regular yearly incomes.

The remarks on the bill also emphasize the fact that this section defends the citizens against an inspection of the private conditions of his business. Moreover, in a communication concerning the census, which, in May, 1897, was issued by the governmental statistical bureau to the daily papers, it was said:

As a census like the present is both a difficult and comparatively expensive enterprise, it is hoped and believed that the manufacturing population, in whose interest mainly the census is taken, will so well and conscientiously fill out the schedules that the information looked for will on every point give a true picture of the real conditions. The inquiries on the schedule are so formulated as to avoid an unfair treatment of the private relations inquired into; this is also guaranteed by the regulations of the law and the approval of the schedule by the ministry of the interior. It should be understood, therefore, that the delivery of the information can be made without scruple and without objection on the part of the citizen. It is hardly necessary to add that it will be used for a statistical purpose only, and will not be employed in any way which concerns the taxpaying ability of the individual citizen, his other relations to the government, or his private affairs.

On the other hand, the census law decreed that whosoever would not answer the questions put in the schedules or addressed by the factory inspectors, or should give notoriously wrong information, or otherwise intentionally disregard the requirements in the schedule or those made by the factory inspection, would incur a fine ranging from 2 crowns, or 53.6 cents, to 20 crowns, or \$5.36. The answering could be further enforced by imposing a daily fine of the same amount.

The remarks accompanying the census bill explain the necessity of that section of the law, as follows:

A condition involved in the successful execution of the present census is that the legislature shall constrain the citizens to answer the inquiries. The facts required are not more numerous or more difficult to give than those which are often obtained without special investigation from many industrial persons. But there is no security that all the industrial persons will in every case fill out the schedule in its entirety, and it will doubtless be necessary for the legislature to issue a special injunction on the point, as is done in the larger foreign censuses.

In the above-mentioned communication to the daily press the statistical bureau says on the same point:

The answering of the inquiries on the enumeration schedule, according to the requirements stated on the schedule—including also the answering of the questions which the law authorized the factory inspection to put—is made a duty of the individual persons concerned. Negligence on their part may result in a mulct or daily fine. But there is hardly a doubt that only a very few will give the government an opportunity to apply these measures. It may be safely assumed that all will understand that it is to the interest of the individual, as well as to the general interest, that through the present handicraft and manufacturing census, material should be gathered which by a careful explanation can furnish the basis for a general view of the position of the manufactures in Denmark.

The section of the law referring to the fines was printed on the enumeration schedules.

But while great pains were taken to reassure the public regarding the census, and also to warn them of their liability if they failed to answer the inquiries, not much was done to instruct them in regard to filling out the schedules. The remarks accompanying the census bill point out that there were not in Denmark, as in Germany, enumerators who might instruct the people—a measure which, it is said, would be very expensive in Denmark.<sup>1</sup>

The circular, however, that was issued to the head officials of the rural districts expressly states that enumerators should be chosen who were capable of instructing the industrial persons about the filling out of the schedules. Moreover, the head officials of all the counties were required to publish the circular sent to them.

## II. THE ENUMERATION.

*The unit.*—It will be remembered that the idea of taking a general industrial census, as suggested by the joint representatives of the Danish manufactures and handicrafts, was rejected, and that it was decided to confine the census to the handicraft and manufacturing industries. The law decreed that it should embrace all the independent mechanics and manufacturers, including those for whom the trade or industry was only an accessory source of profit or constituted only a part of their livelihood. It was to include also the manufacturing joint-stock companies or corpora-

tions as well as the manufacturing enterprises of the state or the commune.

The remarks on the census bill state:

The persons to whom the census applies are the mechanics and manufacturers proper, including the country mechanics and owners of cloak and garment (konfektion) trades, etc., who carry on commerce and manufactures at the same time; also the corresponding companies and corporations; and, finally, governmental and communal concerns. With these latter are to be included also those concerns of a manufacturing kind which are not intended to yield a profit (for instance, the communal establishments for the supply of water).

The remarks accompanying the bill then define the extent and the limit of the inquiry, as follows:

The schedule is to be addressed to every man or woman in town or in the country who carries on a handicraft or manufacturing industry independently or conducts a clothing (cloak and garment) business. This rule will therefore exclude agriculture, commerce (except the cloak and garment business), fisheries, navigation, forestry, and all the professions. On the other hand, it will include handicrafts and manufactures proper, also the manufactures connected with agriculture but without an agricultural character, as, for instance, mills, dairy farms, and slaughterhouses, and as a matter of course, it will include the country handicrafts also when carried on in connection with some agriculture.

The circular issued by the ministry of the interior added that establishments which, owing to the season or other causes, were not working at the time the census was taken were nevertheless to be enumerated, and that if several branches of industry were carried on by the same person, each one was to be looked upon as a unit. The instructions on the schedule said that this division was to be carried as far as possible. This latter regulation, however, was observed in the census taking only in a restricted degree, in the case of combined concerns where both personnel and machine power worked now in the one, now in the other branches of the combined industry. The governmental statistical bureau says that these combined concerns, in perfect agreement with the actual conditions, were to be considered as units and that the boundary chosen offered itself as the most natural from the industrial standpoint.

*The method of canvassing.*—The law decreed that the census should be taken by the use of enumeration schedules and by questions put by the factory inspectors. For communal concerns the enumeration was to be conducted under arrangements made by the local boards, while information about the governmental operations was to be obtained from the administrative authorities. For all other concerns the schedules were to be filled out by the independent mechanics and manufacturers who received them from the enumerators.

The schedule itself was a sheet of two pages, containing in the first half of the first page a short extract from the census act and some general instructions explaining the unit of the census. Then followed the questions which were continued on the second page. At the end of the second page was to be placed the sig-

<sup>1</sup> It was said that the assistance of the factory inspection would be of great importance for the successful accomplishment of the census. But it must be remembered that this assistance did not take place on the large scale on which it was planned.

nature of the person giving the information. No explanation was given of individual questions. In most cases the answer could be made by entering a single word or by underscoring one word or figure. But some of the information called for had to be communicated by filling out tabular forms printed on the schedule.

About the general success of the method of making inquiries in tabular form the bureau states:

Easy and natural as such tabular work is for one who is trained in bookkeeping and in handling figures generally, it may, nevertheless, be very difficult for one who is not so trained. When it is considered that the inquiry schedules were to be filled out by every independent industrial person, even by the most modest village mechanic, and that the filling out was made without instruction by enumerators, it is surprising that the result on the whole proved as good as it did, rather than that failures are found in connection with a matter in itself so difficult as wages and the conditions belonging to them.

The inquiries finally put in the general enumeration schedule were the following: Name of the industrial person; whether the business was a principal or an accessory industry, and in the latter case, the principal industry; in case the industrial person carried on several industrial concerns, the number of schedules filled out; further, the kind of industry; the firm name of the business; the address of the business; the time of the foundation of the business; whether it works mainly for other businesses and, if so, for which; the number of persons in superior positions—the supervision, bureau and commercial personnel, the messengers and other inferior personnel, the laborers by sex, age, conjugal condition, birthplace, and whether working at the place of the business or at home; further, the helpers of the home workers, by sex, and for idle concerns the approximate number of persons employed at the period of operation, by sex; whether machines moved by mechanical power were used; whether steam boilers without motive power were used; horsepower of the engines used in the regular operation; workmen by occupation and wages, also kind of payment.

That part of the census which was to be taken through the factory inspection related principally to the quantity and value of products and the number and kind of machines. It was deemed inadvisable to include questions on these topics in the general schedule, because it was believed that satisfactory answers could not be obtained without direct personal instruction or questioning of the individuals conducting the business. The following explanation of the plan for obtaining this information through the agency of the factory inspectors is contained in the remarks on the census bill:

It can not be denied that, especially for the factory industry proper, it is of great importance to know the extent of the production. But as a general inquiry on that subject could hardly be carried through, and as the most essential part of the factories and a considerable part of the handicraft concerns come under the factory inspection, the statistical bureau has applied to the factory inspectors for their support in the solution of this question. It has been agreed that the factory inspectors will, for every concern subject to their inspection, secure direct information about the quantity and value of the production after rules adopted by general agreement and varying with regard to the method which would be most practical in every individual case. This information will be gath-

ered by means of personal application to every concern under factory inspection.<sup>1</sup>

At the same time information will be secured regarding the kind and number of machines. It would be hardly right to place these questions on the general schedule, as without nearer definition one could get only incomplete and confusing answers. A full statement on the schedules of the names of all the machines which might exist in the different industries would be impracticable and, in certain respects, secure information without sufficient interest. When, however, the factory inspection arranges and puts the questions, homogeneous and valuable information will be obtained for all the concerns to which the inspectors have admission, and all that can be gained by an enumeration of machines will substantially be realized.

As the factory inspection in certain branches of industry covers nearly all the concerns, but in others does not touch upon certain concerns because they do not use mechanical motive power or employ children and young persons, the help of the factory inspection must of course be extended to embrace the concerns conducted like a factory, i. e., with a large number of laborers or machines similar in kind to those already under inspection, even if these do not come by law under factory inspection.

The additional inquiries of the factory inspection about the value of products and the machines had to do especially with the kind of product, its commercial value, its quantity, the value of repairing work or work done for others, the kind, number, and horsepower of power engines and the machines. The additional inquiries about the boilers referred to the kind of industry and boiler, the extent of the heating surface, the working steam pressure, the place and the year of the manufacture of the boiler.

### III. THE REVISION.

*By the local authorities.*—After the schedules were collected and delivered to the local authorities, in accordance with the circulars sent to the head officials of the counties, it was ascertained whether all the schedules had come in properly filled out, and, if necessary, corrections were made. Not later than June 14 the schedules accompanied by the lists of the industrial persons and their addresses were to be forwarded to the governmental statistical bureau, directly, by the towns and places of trade, and through the authorities of the county by the rural communes.

*By the central authorities.*—The largest part of the material of the general census was turned in at the governmental statistical bureau in the month of June, 1897, so that the comprehensive revision work could be started on July 1. Although, as the bureau states, the schedules were generally filled out with creditable care—the penal clauses being availed of in only a very few cases—and although the communal authorities had effected with much accuracy, on the whole, the work of distribution and collection, the material naturally needed to be supplemented and rectified in many

<sup>1</sup> This idea was explained a little more in detail in the instructions to the assistants of the factory inspection.

points. This was done through the communes as the revision advanced.

The plan had been that the governmental statistical bureau should ascertain whether the delivery of the schedules was made in a satisfactory manner, with the help of registers of firms, inventories of guilds and corporations, and so on. The explanations accompanying the census bill further added that it was naturally very important that in case of a larger and more developed industry, a revision of the material be made by experts at the place itself. These experts were presumed to be the factory inspectors. But, as already mentioned, their assistance was not in reality so important as was anticipated.

#### FRANCE.

*Early industrial censuses.*—In the years 1839 to 1845 the French Government for the first time made an official investigation of the manufacturing industries. It was restricted, however, to establishments employing more than ten laborers. In the latter part of 1860, immediately after the commercial treaty with England, the minister of agriculture and commerce ordered a second investigation,<sup>1</sup> covering all workshops and factories indiscriminately. It was not, however, taken simultaneously for all parts of the country, having been begun in 1861 and not finished until 1865. The official report states that it included only about four-fifths of all the manufacturing establishments. A census taken in 1873<sup>2</sup> again covered practically the factories alone. The next census was that of March 29, 1896, which forms the subject of the following study:<sup>3</sup>

#### THE INDUSTRIAL CENSUS OF 1896.

*Origin.*—The taking of an industrial census was deemed necessary in order to furnish a scientific basis for the class of industrial and social legislation which the trend of public opinion demanded and the government was assumed to aspire to grant. It was urged

<sup>1</sup> Statistique de la France. Industrie. Résultats généraux de l'Enquête effectuée dans les années: 1861-1865. Nancy, 1873.

<sup>2</sup> Statistique de la France; statistique sommaire des industries en 1873. Paris, 1874, reprinted with corrections in Statistique de la France. Nouvelle Série. Tome III. Statistique annuelle. Année 1873. Paris, 1876.

<sup>3</sup> The main printed source used is: Direction de l'Office du Travail, Service du recensement professionnel, Résultats statistiques du recensement des industries et professions. (Dénombrement général de la population du 29 mars 1896.) Tome 1, Paris, 1899. The introduction contains many documents referring to the census.

Some further data were secured from:

Direction du Travail. Statistique de la France. Résultats statistiques de dénombrement de 1896. Paris, 1899.

Direction du Travail. Office du Travail. Répartition des forces motives à vapeur et hydrauliques en 1899. Tome 1, Moteurs à vapeur. Paris, 1900.

Bulletin de l'Office du Travail. Le recensement professionnel en 1896 de année Noll, pages 958-967. Novembre, 1899.

The sources of printed information regarding the census of the city of Paris were, besides the special schedules for that city and the instructions: (1) Instructions aux contrôleurs. (2) Instructions aux agents recenseurs. (3) Instructions pour le dépouillement du recensement.

Besides this, verbal and written information was obtained from M. Lucien March, chief of the industrial census, and from Dr. Jacques Bertillon, chief of municipal statistics of the city of Paris.

that the economic policy of the country must be determined with reference to the comparative importance of the various industries and their territorial distribution, and that labor legislation required a study of industrial transformations and exact and definite statements showing the extent of the want of employment and measuring the importance of large as compared with small establishments. While the occupations of the people were ascertained by the regular population census, and while certain investigations in regard to industries were undertaken in connection with the administration of direct taxes and other data was obtained by provincial authorities, the information derived from these sources was not considered sufficiently complete or sufficiently reliable to subserve the purpose in view.

Influenced by such considerations as these, the superior council of statistics and subsequently the labor office were led to recommend the taking of an industrial and occupation census, which should group the industrial population of the country by concerns as well as by kinds of occupation, and should ascertain the number of employees in each establishment, the period of employment, and the rates of wages. The recommendation of the superior council addressed to the ministry of commerce and industry was made in 1886. The ministry decided that the project involved too great expense, and there the matter rested until the labor office came to be established in 1891. That office at once turned its attention to the question of taking a special occupation census. But the limited means and personnel of the office were inadequate for a work so extensive and complicated. Fully realizing this, the director of the office in 1893 submitted a report to the ministry of commerce, recommending that a bill to provide the necessary appropriation for a census be submitted to parliament. This recommendation was not acted upon; but the next year, 1894, the ministry, at the request of the new director of the labor office, appointed a commission which was charged to prepare, in cooperation with that office, a plan and an estimate for an industrial census. The commission was composed of eleven members; the president was the statistician, M. Levasseur; the other members were officials connected with the different branches of the government service. The commission submitted a report prepared by the assistant director of the labor office. In this report two alternatives were considered: (1) A special and independent industrial and occupation census, similar to the one in Germany; (2) an occupation census to include some data in regard to industries and to be connected with the general population census in such a way that all the information could be collected on the same schedule.

The commission recommended from the scientific standpoint the first method and outlined a plan proposing an individual schedule for every person over 12 years of age, with a recapitulative household



schedule, and, in addition to these, an establishment schedule for the agricultural, manufacturing, and commercial industries and the professions. It distinguished between principal and accessory occupations, between principal habitual and principal temporary occupations. The intention was to enumerate the subdivided concerns, classifying them according to their importance and distinguishing those which used mechanical motors and those which employed home workers without helpers. The commission insisted on the advantages of such a special census and submitted estimates of the expense for the state. But, anticipating that the expense and the fear of annoying the people might deter the government from undertaking a special census, the commission considered also the possibility of modifying the schedule of the ordinary population census so as to obtain valuable information in regard to occupations and industries.

The government did not approve of a special census, and finally decided that the general population census in 1896 should be modified according to the propositions of the commission so as to include a detailed presentation of occupations and industries. The chambers,<sup>1</sup> moreover, in voting appropriations, asked that particular stress be laid upon inquiries concerning occupation. The decree ordering the census was signed on February 10, 1896, and on February 13 special instructions were issued to the presidents of all the provinces of France and Algeria by the minister of the interior.

*The legislation for the census.*—The decree ordering the census consisted of three articles. It provided that the census of the population should be taken on Sunday, March 29, 1896, under the supervision of the mayors; it specified certain classes—such as military and naval troops, the inmates of prisons, houses of correction, and hospitals, and the personnel of certain kinds of educational institutions—which were not to be included in the population serving as a basis for the assessment of taxes or the application of the laws of municipal organization; and it provided that the president of the council and the ministers of the departments of state should be charged with the execution of the decree within the limits of their several jurisdictions.

The recommendation of the director of the labor office that the census of 1896 be ordered by the legislative body for France was not followed.<sup>2</sup> The ad-

ministration feared that the measure would be defeated if submitted to the legislature, and therefore issued the order for a census purely as an executive act. The decree made hardly any reference to the industrial features of the census and left the details to be determined by ministerial instructions, which, as has been stated, were issued on February 13.

*The date.*—The industrial census, as a result of its connection with the regular quinquennial population census, was taken in the year 1896. The last population census had been taken on April 12. Spring was again regarded as the proper season, but it was thought that an earlier day would on some accounts be preferable. At the same time it seemed most convenient to take the census on Sunday,<sup>3</sup> as had been done in 1891. Accordingly the date fixed by the decree of the president was Sunday, March 29.

France is subdivided into 87 provinces (départements), headed by the provincial presidents (préfets). The 87 provinces are subdivided into 362 districts (arrondissements), which are headed by the administrative presidents (sous-préfets), with the exception that the provincial capitals forming districts and the districts of the province of the Seine are headed by mayors. The 362 districts are subdivided into 36,170 communes, headed by the mayors (maires). The city of Paris, in which the duties pertaining in other cities to the mayor's office are mostly performed by the provincial president of the Seine (préfet de la Seine), is subdivided into 20 districts, which, as just stated, are headed by mayors. Algeria is subdivided into 3 provinces, likewise headed by provincial presidents (préfets).

*The administrative authorities.*—The president's decree provided that the mayors of the different municipalities should conduct the census work within their several jurisdictions. An exception was, however, made in the case of the city of Paris. For Paris, its environs, and the province of the Seine the census was conducted by the bureau of municipal statistics. The instructions issued by the minister of the interior defined the duties of the mayors of communes and of the presidents of provinces. These officials not only controlled the census taking, but did a part of the tabulating of the returns, so that much of the raw material never reached the central office. It appears, however, that all data referring to occupations and industries were turned in to the labor office and that all tabulation of those returns was made under the direction of that office.

#### I. IMMEDIATE PREPARATION.

*The division of the country.*—The decree authorizing the census prescribed that it be taken by communes. The ministerial instructions gave directions that the

<sup>1</sup>The French parliament consists of a senate (sénat) composed of 300 members, 225 of whom are elected for nine years by indirect vote, and the chamber of deputies (chambre des députés) composed of 584 members, elected for four years by universal suffrage.

<sup>2</sup>The request for a law precisely determining the conditions of the census and including a clause regarding penalties to be inflicted had often been expressed before in France. As a result of an investigation made by addressing inquiries to the provincial presidents, M. E. Bouffet, director of the provincial and communal administration in the ministry of the interior, added to this demand a proposition that certain regulations should be made in regard to the recruiting of the enumerators, the obligatory proportion of their number to the population, the minimum of their salary, and the verification of each schedule.

<sup>3</sup>At the population census of Germany, 1895, the wish to avoid Sunday, had led to the choice of December 2 instead of December 1, which had been the date ever since the founding of the Empire.

commune be divided into enumeration districts (circonscriptions de recensement) embracing about 100 inhabitants each. If that rule had been followed everywhere, a district would not, on the average, have comprised more than 20 households, but in fact the districts were not infrequently much larger, containing in some cases 1,500 inhabitants.<sup>1</sup>

*The distribution of forms.*—The expense of furnishing the schedules, the form of which was given as an appendix to the ministerial instructions, devolved upon the communes. As a natural result, the schedules were for the most part printed by local printers and the work was more expensive than it would have been if centralized.

Probably there was not much uniformity in the methods of furnishing the schedules to the enumerators. Generally the task seems to have devolved upon the mayor. In the city of Paris it was the duty of the supervisors to provide the enumerators with schedules, instructions, and cards of authorization. The number of schedules needed was determined by the enumerator on the basis of a preliminary census.

*Organization of the staff.*—(a) The higher officers: The decree ordered that the census be taken through the mayors. The circular to the provincial presidents adds that if, contrary to all expectation, they met with either evident ill will or a formal resistance from any commune, they could resort to the legal means provided by section 85 of the municipal law of 1884 and charge a special delegate with the task of taking the census. While, as a rule, the securing of the entire staff was the duty of the chiefs of the commune, the city of Paris created an intermediate station. The provincial president of the Seine named for each of the 20 districts a supervisor (contrôleur). These, elected according to the proposals of the mayors, were generally officers of the mayoralty. They directed the census in their respective districts and represented the mayors in all matters pertaining to it.

(b) The enumerators: In the ministerial instructions the mayors were directed to appoint for each enumeration district one enumerator (agent recenseur), who should be charged with the distribution, verification, and collection of the schedules. In order to make clear the official character of their mission, the enumerators received a copy of the order by which they were named. In the rural districts especially the "garde-champêtres" (officers charged with the care of rural production and also empowered to arrest delinquents in the fields) were chosen. The enumerators were generally, although not in all cases, insufficiently paid. In Paris they received six-tenths of 1 cent (3 centimes) for each individual schedule, 1 cent (5 centimes) for each household schedule, and 2 cents (10 centimes) for each house blank.

<sup>1</sup> The labor office mentions among the modifications to be introduced at subsequent censuses a smaller size of the enumeration districts.

In Paris large public establishments (such as barracks, boarding schools, or hospitals) were withdrawn from the regular enumerator, and the task of delivering and collecting the schedules was delegated to some employee of the establishment.

*Preliminary investigations.*—The ministerial instructions state:

The first care of the enumerator will be to establish on a special form, called the "notebook" (carnet de prévision), the number of houses and households of which his district is composed, and, as exactly as possible, the number of individuals comprehended in each household.

This first operation, which must precede by about eight days that of the census proper, is intended to make known the number of house blanks, household schedules, and individual schedules which it will be necessary to distribute. In order to get the complete list in every commune, of all houses and all factories, in short, all lots built upon, the municipalities will prepare the notebooks on the basis of the last records of 1896, deposited in the municipal archives. It is important that no house, inhabited or not, shall escape the enumeration.

In Paris this preliminary census was taken in the following way: The enumerator obtained the information needed for filling out the notebooks by a house-to-house canvass. He was directed by the instructions to begin this canvass on March 19 and complete it by March 24. He was to learn by inquiry the number of households and of inhabitants in each house in his district and enter the data in his notebook. On the basis of this information he could determine how many schedules would be required. Much stress was laid upon the importance of fidelity and accuracy in this work.

This notebook, as used in the city of Paris, was more elaborate than the general one provided by the ministerial instruction. It was a quarto of 36 pages containing questions regarding the occupation, an extract of the instructions to the enumerators, and a model illustrating the filling out of the notebook.

## II. THE ENUMERATION.

*The unit of the census.*—The labor office expressed the opinion that the study of industrial transformations required, first of all, the distribution of the persons carrying on an industry by establishments, then the separation within the individual establishments of the various distinct branches of industry. In that way, it was said, the periodical censuses would furnish a basis for measuring the progress and the concentration or disintegration of manufacturing industries and for investigating the various social and economic questions connected with industrial organization.

In agreement with these views the establishment was adopted as the unit of the census.

The ministerial instructions defined the term "establishment" as follows:

By establishment will be understood the union of several individuals working together habitually in a building or in a definite place or in several neighboring buildings or places under the direc-



tion of one or several representatives of the same firm. \* \* \* A worker working alone at home is considered as constituting a separate establishment. A group of laborers sent to a definite place for the erection, construction, or repairing of a building, etc., does not constitute an establishment, because this group works at that place only temporarily. The establishment is the bureau to which the workers assign themselves or the depot where they get their pay and where the chief of the establishment is.

The authorities themselves fully realized that this unit of the establishment would not always be a homogeneous one. Where it was a combination of different branches of industry, it might present a very diversified aspect. The labor office says:

Two distinct branches of activity can be simply joined together or associated; such is the case, for instance, with a grain mill and a mechanical sawmill belonging to the same proprietor.

Different branches can be so joined that although independent, as regards operation, they contribute to a common result, the realization of which constitutes a distinct industry. Thus an establishment for the construction of agricultural implements can comprehend a joinery, carriage building works, mechanic's workshop, and locksmith's business. Each of these workshops constitutes a distinct branch for the carrying on of a distinct industry. These different industries, then, are considered as branches of the general industry carried on in the establishment, namely, the construction of agricultural implements.

Often different branches of industry are connected as the successive links of a chain, the one being engaged on a process which is subsequent to the operations of the other. Such is the case of an establishment in which are grouped the scouring, the combing, the spinning, the weaving, the dressing, and the dyeing of wool.

Finally, in a great number of industrial establishments, there exist, in addition to the industries which form the object proper of the industrial activity, auxiliary industries; as a workshop for the repair of the looms in a weaving mill.

With regard to the general definition of an establishment as officially given the labor office said:

According to the ministerial instructions it is the grouping of the laborers which constitutes the establishment and not the buildings in which the industry is carried on. An establishment can exist in the open air; for example, a timber cutting yard. But it is necessary that the group of workers be placed under the direction of one or several representatives of the same firm; that is, the principal characteristic of the establishment is the legal situation of those who are legally responsible for its conduct. Finally the "branch of activity" must have a certain character of permanence in a determined place (place of the branch or the establishment); each one of the different yards of a manager of masonry in a city does not constitute an establishment.

With regard to the statement in the ministerial instruction, that a worker working alone at home is considered as constituting a separate establishment, the labor office said:

Besides the establishments, there are isolated individuals, scattered independent laborers, not employing anyone and not working under the direction of anyone; for instance, the basketmaker, domestic or itinerant; the domestic shoemaker. One must count also the individuals, who, although working under the direction of another, are not employed permanently by the same person and do not properly belong to establishments, the term "establishments" implying always a certain permanence of employment. As examples of scattered employees or laborers of this kind, with irregular employment, can be cited the wharfmens of boats, the day seamstresses, etc.

Altogether the definition of the term "establishment" does not seem to have been precise enough to insure uniformity in its interpretation. But since all the inquiries were alike addressed to every person pursuing a breadwinning occupation, and since the decision as to what had to be considered as an "industrial" establishment was made only through the classification in the central offices, this is not the place to enter upon that question.

*The finding of the units.*—Reference has already been made to the notebooks used in the preliminary canvass which was made for the purpose of discovering the concerns to be enumerated.

In the city of Paris the principal instructions in regard to filling out this notebook, so far as it concerned the industrial census, were briefly as follows:

If the absence of a porter, the occurrence of a funeral, or any other circumstance compels the postponement of the canvass of a house, the enumerator will nevertheless insert at its proper place (in column c) the number of the house not canvassed; but he will not give it the order number in column a. He will immediately state in column b why it is impossible to canvass the house immediately. For example, he will write the words, "porter absent." Sometime later, when, after having canvassed other houses, he is finally able to canvass the house in question, and when he has given it an order number in column a, he will enter this number in column b behind the words entered formerly. For instance, after the words "porter absent," already entered, he will add "see col. a, No. \* \* \*"

After having made known his authority and shown his card (without waiting to be asked for it), the enumerator will first enter on his notebook the name of the porter of the house (col. f) and the number of persons who constitute the household (col. g). On the same line he will enter (col. h) the word "porter."

He will then address to him questions in the following order:

- (1) How many stories are in the house? (Enter the answer in col. b.)
- (2) On the first story, how many dwellings are on the ground floor?
- (3) What is the name of the person (head of household) who occupies each of these dwellings? (Enter the answers in col. f, assigning one line to each dwelling.)
- (4) What is the number of inhabitants who are in each of these dwellings (give notice to the porter that it is necessary to enumerate even the children of small age). (Enter the answers in col. g.)
- (5) What is the occupation of each head of household? (Enter the answers in columns h, i, and j, according to the indications contained in the head of these columns.) It is of much importance that these columns be carefully filled out.
- (6) Same questions for the "entre-sol" (apartment between the ground and first floor) and each of the other floors.
- (7) Same questions for the other stories of the house. If one of them is a story for servants, care must of course be taken that the same dwellings are not counted twice.

Special attention must be paid to the dwellings situated at the top of the houses, the arrangement of which the enumerators must inquire into very carefully, so as not to make omissions; also to the shopkeepers, especially in houses forming a corner, since their dwelling often opens not to the interior of the house but only to the shop, and it may easily happen that one forgets to enumerate them; and to the persons who may live (i. e., sleep habitually) in basements, shops, stores, workshops, stables, barns, coach houses, sheds, cabins, and other low buildings situated on the level of the soil.

Where a person is absent, if the probable date of his return is rather near (for example before March 29), it will be necessary to count him in col. g; if not, or if the date of his return is unknown, it

will not be necessary to count him. If an entire family is absent (for instance, in the country, without otherwise residing there more than six months of the year), the enumerator will mark it on his notebook and will enter in col. b the words "family absent."

The houses without porters will be enumerated like the others. The enumerator will obtain his information from a lodger familiar with the house; but he will verify it with as much care as possible in order to avoid omissions.

Hotels and furnished rooms will be canvassed exactly in the same manner as the other houses. It will be necessary to note the name of the hotel (col. b), the name of the hotel keeper (col. f), the number of persons who compose his household, i. e., his family and the domestics, cooks, and other servants of the hotel (col. g). In col. h will be written the words "hotel owner." It will be necessary further to bring to the hotel as many individual schedules as there are travelers present, as many household schedules as there may be isolated travelers or groups of individuals living together. It will be useful to note with care the name and occupation of the inhabitants of the inns and furnished houses patronized by poor, ignorant people, who badly fill out their individual schedules. This will be necessary likewise in the case of individuals who are not transiently located in the furnished houses but have there a domicile practically fixed. It will be less useful in the inns patronized by travelers. A large part, indeed, of those who are there on March 19, for example, will not be there still on the 29th, and the information secured concerning them will be useless. It will then be sufficient in filling out the notebook to note the number of these passing travelers.<sup>1</sup> But it will be necessary in collecting the schedules and likewise in the verification to be the more careful in requiring a good filling out of all the individual schedules of the travelers lodging in these inns. If necessary, the enumerator will ask for the register of the hotel. He will ask the proprietors of the hotels to have individual schedules and household schedules filled out by the travelers who stop at their establishments on Sunday after having passed the night from March 28 to 29 on the railway and who would consequently not have filled out their individual schedule at the point of departure.

In the asylums for passing the night the enumerator will first ask the name and the occupation of the director and the employees who sleep in the establishment. He will then ask: "What is the maximum number of persons who come to pass the night here?" He will enter it on his notebook (col. g). In col. b he will enter "night asylum," and in col. h the word "lodged." For the night from March 28 to 29 it will be necessary to make out an individual schedule and a household schedule for each individual lodger.

At the railway stations, the enumerator will address himself to the station master or his substitute. He will ask of him the number of persons living in the station. The employees and laborers retained by night work, but who have a domicile outside of the station, will be enumerated at their domicile. The enumerator will ask for a statement of the persons (watchmen's inspectors, pointsmen, watchmen of the storerooms, etc.) who live in any construction established in the dependencies of the station, in case these lodgings have not, besides, a direct communication with the exterior.

With regard to factories, the enumerator will remember that each factory is inhabited at least by a porter or watchman. The word "factory" will be entered in col. b of the notebook.

If—an extraordinary case—a porter refuses to allow the house to be canvassed, the enumerator will ask him the name and address of the proprietor of the house. He will note on his book (col. b) the answer of the porter, whatever may be that answer, and will report the matter to the supervisor.

Such were some of the principal instructions for finding the population which was to furnish the data used

in the industrial statistics. It would lead too far to enter into the detailed instructions regarding the population living in other special buildings and the population enumerated separately according to the presidential decree.

*The method of canvassing.*—The commission named by the minister of commerce passed a set of resolutions presenting its views in regard to the best method of taking an industrial census; and although its recommendation that a special industrial census be taken was not accepted, in other respects the general principles it formulated were applied as far as practicable in the executive measures which were adopted later on. These resolutions were as follows:

(1) The plan of taking a special census organized with a view to investigating the individual occupations and the number of laborers of all kinds in the different branches of economical activity is the best one; it is far preferable to the plan of asking accessorially information regarding occupations at the ordinary population census and extracting the data from the schedules of this census.<sup>2</sup>

(2) To secure by a census the statistical data which seems actually indispensable, it will be necessary either to deliver an individual schedule to every inhabitant old enough to pursue a breadwinning occupation and also a summary household schedule to each household, or else deliver a household schedule alone, making it more complete so as to comprise for every person to be enumerated, all the statements which by the other alternative would be entered on the two schedules.

The employer can not, since the suppression of the "worker's record," furnish the answers referring to the age and nationality of his laborers; he can not give information about the members of their families dependent upon them; he can not make statements regarding the number of individuals without employment in the occupation in question. Moreover, if all the persons of breadwinning age are not canvassed by an individual schedule or by a household schedule, there would be the danger of omitting from the investigation the persons whose industry is carried on at home; as, for instance, the homeworkers and, in general, all the employers and laborers working on their own account who are not already entered on the official lists by the tax authorities, the labor inspection, etc. This last consideration explains why the enumeration could not be restricted to a portion of the industrial population determined in advance, even if the actual data regarding agriculture and the professions were judged sufficient.<sup>3</sup>

(3) Questions about the constitution and the size of each establishment grouped as much as possible on a separate schedule, called the establishment schedule, should be addressed to the employers.

The chief importance of the establishment schedule is for the study not of the individuals but of the enterprises; it alone elucidates the situation of the employers and the conditions in regard to wages. This information will verify to a certain degree the census of the individuals and will be verified by it. The two censuses furnish mutual guarantees of accuracy.

To these resolutions the commission, rather anticipating that the project for a special census would not be approved, added the following:

(4) In case the project defined by the first three propositions is not executed, it is important not to give up entirely a useful plan, and it would be well to profit by the schedule of the ordinary population census in order to put certain questions and to secure at least a classification of persons by industrial groups.

<sup>1</sup> This simplification was made partly because of the fact that at the census of 1886 some proprietors of hotels had received the enumerators with little kindness, in the fear that their lodgers would be troubled by inquiries, the purpose of which they would not understand.

<sup>2</sup> This decision, which was in agreement with the request made in 1886 by the superior statistical council, did not raise any objection of principle in the commission.

<sup>3</sup> This proposition received a unanimous vote in the commission.

The model of the individual schedule proposed by the commission was a sheet 7.6 inches wide and 10.8 inches long, printed on both pages. At the head of the first page were entered the province, district, commune, ward, street, and house number. In the upper half of the schedule followed the questions referring to the name, sex, age, birthplace, nationality, conjugal condition, number of children, residence, and occupation. In the lower half were the additional questions addressed to industrial persons, the left side being reserved for the employers directing an establishment and the right for the employees and laborers. The commission, having been obliged to sacrifice the establishment schedule, tried to supply the lack as far as possible by asking the persons directing an establishment as employer or director to state the firm and the place of the establishment, as well as the number of persons employed, by sex. Every individual answering the questions of that part of the schedule would already have entered in the upper part his status as employer, but not every individual entered in the upper part as employer would be obliged to answer in the lower one. That would not be necessary if his partner had answered these questions, since every establishment was to be entered only once on the schedules. The home worker, considered as an independent industrial person, answered the questions in this part of the schedule. The questions addressed to laborers and employees, to wage-earners, working under the orders of another or being in the service of another, including engineers, etc., referred to the nature of the industry of the employer, the name of the establishment, and if they were unemployed the reasons for their want of employment. The back of the schedule contained the explanations to the questions, with examples to illustrate the proper method of filling out the lower part of the front of the schedule.

*The inquiries.*—The representative of the ministry of the interior in the commission had insisted upon putting only a limited number of questions. The commission had yielded and, in regard to the industry of the person enumerated, resolved to introduce only a few supplementary inquiries.

The questions addressed to all persons alike referred to the following points: (1) Name, (2) sex, (3) age, (4) birthplace, (5) nationality, (6) conjugal condition, (7) number of children living, (8) whether resident in the commune or temporarily present, and (9) occupation. Then, in case of an independent industrial person, the questions were (*a*) firm, name, address of the conducted establishment; (*b*) number of persons occupied; (*c*) whether home worker. In case of an employee or laborer they were (*a*) name and address of the employer; (*b*) nature of the industry of the employer; (*c*) if unemployed, whether by reason of sickness or infirmity, season, or other reason; (*d*) how many days without a position.

With regard to the selection of the questions to be put on the individual schedule, the labor office expressed the opinion that information in regard to the organization of the enterprises, the implements, the production, the salaries, etc., must, at least in France, be obtained by special investigations and not by a general census. That a general industrial census might, however, enumerate not only the persons engaged in industries, but also the inanimate motive power, together with the various occupations of each person, was admitted to be possible. This, it seems, had been contemplated in the project for a separate industrial census in 1894. The labor office, however, deemed it inadvisable to complicate matters in the first application of a new method, and accordingly the idea of investigating inanimate motive forces and secondary occupations in 1896 was given up. Moreover, it was pointed out that the ministry of public works collected information in regard to the motive power furnished by steam and navigable water courses, and the ministry of agriculture in regard to water courses not navigable. The labor office suggested that it would be easy for these administrative authorities to furnish on a slip a statement for each industrial establishment using motive power of this description, and that these slips could be classified in the same way as the personnel of industrial establishments.<sup>1</sup>

In spite, however, of the very limited number of questions included in the schedule, those regarding the occupation and industry were not answered in a satisfactory manner. The returns constituting the basis of the industrial census—that is, the data in regard to the address of the establishment—were especially deficient.

### III. THE REVISION.

*By the enumerators.*—The first verification of the schedules was made by the enumerators. The instructions for this work were as follows:

Beginning with Sunday evening, the enumerator will go from house to house, according to the order of his notebook, collecting the filled-out schedules and filling out, with the cooperation of the porters, the house blanks. This work will be continued Sunday evening, Monday, and Tuesday. It must be finished by Wednesday evening.

The enumerator will first ascertain whether the envelopes, each of which represents a household (that is, corresponds to a name entered in col. f of his notebook), are all delivered to him. For this purpose he will mark on his notebook by a cross the name of each head of household whose envelope is delivered.

If one or more envelopes are wanting, the enumerator will demand it either from the porter or from the head of the household. In case he can not get it, he will note the name of the head of the household in arrears and will demand the lacking envelope the next day. Finally, he will notify the supervisor of the deficiency.

<sup>1</sup> Such slips, it seems, were in fact subsequently provided and were tabulated by the occupation bureau in accordance with the principles which had served as a basis for the tabulation of the census schedules, using, that is, the same definitions of establishment and principal industry. The slips, however, referred to the year 1898, and when they reached the office the tabulation of the schedules of the census was finished and it was not thought advisable to go through them again.

If an individual has neglected to fill out his schedule, the enumerator will obtain the necessary information and fill it out at the residence of the person concerned.

If that task can not be accomplished, or if an individual refuses under any pretext to be enumerated, the enumerator will take note of his name and report him to the supervisor.

In case a whole family residing ordinarily in Paris is absent during the night of March 28 to 29 and has not filled out its schedules, the enumerator, assisted by the neighbors or by the porter, will fill out the household schedule of this absent family. No individual schedules are to be filled out for persons absent.

With regard to the occupation questions, the enumerator was reminded that the answers must be verified with particular care, and that this could be done easily with the help of his notebook (cols. h, i, j). Insufficient answers like "journeyman," or "employee," or "merchant" were not to be accepted. The actual occupation of the journeyman or the merchandise which forms the object of his industry must be stated. The enumerator was furthermore directed in particular to see that the names and addresses required in the lower part of the schedule had been supplied, and that the line entitled "nature of the occupation, the industry, the commerce of your employer" had been filled out.

Especial emphasis was laid upon the importance of the distinction between the manufacturing industries and the industries purely commercial. In all cases in which the designation of the occupation did not make it clear whether the person was a manufacturer or a merchant, the enumerator was to procure more explicit information. For instance, in case the person enumerated declared himself to be a "jeweler," without further explanation, it was necessary to inquire whether he was occupied with the manufacture of jewelry or only with its sale. So, too, if he returned himself simply as hatter or armorer. On this point the instructions contained the following general rule:

Every person manufacturing any products (either with raw material or with manufactured products) or connected in any manner with their manufacture must write after the name of his occupation the word "manufacturer." Persons carrying on industries having as the principal purpose the repairing of objects already manufactured will also be considered as manufacturers. Every person pursuing principally the sale of objects manufactured by others without making them undergo any preparation must write behind his occupation the word "merchant." If these distinctions are not made on the individual schedules, the enumerator will have to obtain the information and supply the lack.

*By the communes.*—The sending of the schedules to the adjacent communes had to be done before May 15.

The labor office said:

According to the ministerial instructions the grouping of the industrial blanks by the place of work, which is stated on the blanks—that is, by establishment—devolved upon the mayoralties. The principal aim of that regulation was to impress upon the mayoralties the necessity of receiving from the enumerators only well filled-out schedules. Further, in case deficiencies appear during the classification it is easy to make on the spot the necessary supplementation. Finally, the mayoralty, often knowing most of the establishments of

the commune, can detect the mistakes which may arise at the reconstruction of these establishments. The grouping of the blanks according to the establishment to which they refer is moreover not more difficult than the grouping of the mail which is done daily in all the postal offices; the mayoralties can do it easily, and they possess with regard to the names, the addresses, and the personnel of the establishments facilities of information practically much superior to the resources of a central bureau; for the technical classification, superiority of the central office; for the grouping by establishments, superiority of the local authorities.

If, however, one should restrict oneself to referring to the establishments of the commune the schedules collected on its territory, one would in many cases group only a fraction of the personnel of these establishments, since many laborers live in adjacent communes. If no account was taken of those, it would happen that the number of blanks referred to an establishment would differ much from the actual number of laborers, and from the number stated on the blank of the chief of the establishment; then the clerk charged with the grouping could not do any verification; he would not, on account of the insufficiency of this classification, even notice the utility of the grouping required from him.

The ministerial instruction then prescribed the exchanging of blanks between adjacent communes to take place before the grouping by place of work.

Each commune was to send to its neighbor the blanks collected in its own territory of persons working in establishments having their place of business in that adjacent commune, the exchanges between adjacent communes to be accomplished without resort to any intermediate factor. They were restricted to contiguous territories, precisely on account of the difficulties of transmission and in order to avoid the intermediation of the post.

The deficiencies which a certain number of schedules presented with regard to the determination of the establishment to which they referred ought to have been supplied in the communes at the time of the grouping by place of work. Unfortunately the ministerial instructions prescribed that the individual schedules be cut into two parts before proceeding to the grouping, so as to separate the industrial from the population data, and then the clerks of the mayoralties found trouble in grouping the industrial blanks incompletely filled out; since the industrial blank does not generally (that is, in the case of employees) bear the name of the person enumerated, it was too late to remedy the difficulty.

Besides, the instructions about the grouping by place of work have not always been followed. Particularly a certain number of great cities have dispensed with it. Among the large cities, however, some, as Rouen, St. Etienne, Rheims, Le Havre, and others less important like Le Mans, Verdun, Angoulême, Lens, etc., have, by transmitting schedules perfectly grouped by establishments, shown that the work could be done by the commune. If done by the commune before the cutting of the schedules, it permits the completion on time of those which might be too insufficiently filled out to be classified.

The ministerial instruction fixed June 15, 1896, as the latest date for the sending of the industrial blanks to the provincial authority. Unfortunately the changes in the municipal authorities which took place in May, 1898, occasioned unusual work to the employees of the mayoralties and caused a certain amount of delay in transmitting the schedules to the central office. Some communes did not forward schedules at all, either because they had been destroyed or miscarried or had not been made out.

*By the central office.*—On account of the changes in the municipal authorities, certain communes had not sent the material to the provincial authorities by June 15,

1896. That circumstance, however, could not justify the excessive delays of certain provinces. Although these were required to send the material to the labor office before August 1, the schedules of the last province were not forwarded until December, 1897. The labor office adds that the last departments to be ready were not those where the operations had been the best conducted. It has already been stated that a certain number of communes had not furnished schedules at all. Out of the 87 departments, 47 did not send in schedules for all their communes. From a total of 36,170 communes, 858, or 2.4 per cent, did not send in schedules. These were nearly always rural communes and of such small importance that it seemed legitimate to supply the schedules by the "nominative lists" of the inhabitants. Reluctant to begin anew the operations of the census in these communes, the labor office had first in mind to ask them to make the tabulation with the help of the information furnished by these "nominative lists." It was decided, finally, that this work did not offer sufficient guarantees of reliability and the nominative lists were sent to the central office for exploitation. These lists furnish in regard to the personal condition of each inhabitant the information habitually entered upon the industrial blanks exclusive of the statement referring to the place of birth (born in or outside of the province).

The next task of the central office was to ascertain the completeness of the classification of the schedules by place of work. This proved to be an immense task. Out of about 3,522 communes, with more than 800 industrial blanks each, the classification had to be entirely made or had to be completed in 2,057. If the 66 communes of the city of Paris—for which it was decided that the grouping by place of work should be made by the labor office—were set aside, for 1,991 out of 3,456 communes, or 58 per cent, this supplementary work had to be done at the central office. This does not include all the communes where the work had been insufficiently done.<sup>1</sup>

Together with the verification of the completeness of

<sup>1</sup> The labor office adds in this regard: "It is to be noticed that the schedules incompletely filled out are the most numerous in the communes which have not made the grouping by place of work. The reason is plain. In the communes where the municipal authority has aimed to execute the operations of the census in a manner entirely conforming to the instructions, the enumerators have been requested to return only schedules entirely filled out, and it has been seen that they did so. It has besides been ascertained that in most of the communes where the operations have been executed in a satisfactory manner, the majority of the schedules were filled out by the hand of the enumerators. It follows from these observations that by imposing upon the communes, in lieu of other tasks withdrawn, the grouping of the industrial blanks by place of work, the municipal administrations have been induced to watch more closely the execution of the work transferred to the enumerators. They were obliged to insist on fresh attempts whenever the schedules collected at the first round of the enumerators were not properly filled out. Where the provincial administrations have on their part taken care that the communes executed the instructions and transmitted without delay the grouped blanks, the operations have generally been well performed; the tabulation has been easy and has furnished statistics without deficiencies."

the classification, the rectification had to be made. With regard to the rectification of the classification by the place of work, the ministerial instructions prescribed:

The blanks of persons working either as chiefs or as employees or laborers in the same establishment must be grouped and kept together. Insufficient or wrong classification will be rectified first.

The home workers must not be credited to the establishment which furnishes them work in case they do not work in that establishment.

In case two very different industries are carried on in the same establishment, two separate establishments will be constituted. Likewise the members of the same family who pursue very different occupations must be grouped with their respective occupations, even if they pursue these different occupations under the same roof. Thus the husband as mason master, the wife as haberdasher, will be grouped each with their industry and will be considered as directing separate establishments. On the other hand, the husband as tailor for men, the wife as seamstress, probably helping her husband, compose only one establishment where the industry pursued is that of tailor for men.

An establishment, a yard, the principal place of business of which is in another commune than that where it is itself situated, must never be referred to the principal establishment; it must always constitute a distinct establishment.

In the same commune no separate establishment will be formed for the factory and the sale shop pertaining to the same firm; but a separate establishment will be constituted for every retail sale shop.

With regard to the determination of the position of the enumerated, the following rules were issued:

It is necessary to rectify the blanks for the employees and laborers who should have filled out their schedule in the left part instead of the right part. In the grouping of the blanks of the establishment the schedules of the chiefs of the establishment (answers at the left of the blank) must come first; those of the employees and laborers (answers at the right of the blank) will come next. The blanks of the personal servants must be placed after all the others.

The woman pursuing the same occupation as her husband, chief of establishment, will always be considered as chief of establishment, even if she was entered as employee of her husband. It will not be the same for the children.

Those working at home on the account of one or more houses which furnish them work are independent laborers and are considered as chiefs of establishments.

The laborers employed sometimes by one person, sometimes by another, day laborers, day seamstresses, housekeepers, etc., will be included in their occupation class in the category of independent workers.

Every blank of an independent worker must be marked by the letter T. In case a blank is filled out neither in the part reserved to the employer nor in the part reserved to the employees and laborers, and if it is possible to determine from the indicated location whether he is employer, employee, or laborer, there will be entered at the left, as the case may be, one of the letters P, E, or O (patron, employé, or ouvrier).

With regard to the rectification of the number of employees and workers stated on the blank of the first chief of establishment, three cases were to be distinguished:

(1) In case the number of employees and laborers stated on the blank of the chief is equal to the number of employees and laborers whose blanks have been joined, excluding the personal servants, this number, if right, must be underscored.

(2) In case the stated number of employees and laborers is greater than that of the blanks found, one will still consider it right, unless the employer has counted himself, his wife, or his partners; unless, also, he has personal servants or has counted home workers. It is generally possible to ascertain these facts which, in a given commune and for certain industries, are nearly always analogous. When they are stated the units counted in excess will be deducted from the number stated on the blanks of the chief of the establishment.

Not considered as personal servants are the agricultural domestics and servants, the servants of both sexes employed by retailers of drinks, fruiterers, grocers, bakers, innkeepers, also those in the schools. The male servants of millers and bakers are considered as laborers.

(3) In case the number of employees and laborers stated is smaller than the number of corresponding blanks found, the figure stated will be replaced by the number of the blanks really found, unless it be evident that the surplus blanks belong to home workers who have answered in an incorrect manner.

(4) In case the number of employees and laborers remains unknown, put at the place the sign X.

It was further added:

There will be found blanks of persons working in a regular manner as laborers or employees in an establishment, but who have not stated the name of that establishment. It is often possible to infer, from the occupations stated, to which industries these blanks belong. These blanks can then be assigned to the establishments of the same industry in the locality, in case the numbers of employees and laborers stated by the employers are greater than the numbers of blanks which had been assigned in the first part of the work.

In all doubtful cases put aside the blanks until supplementary information has been secured.

The labor office stated that the troublesome cases were settled after much research. But the negligence of the communes, together with the impossibility of remedying it at the central office—a consequence mainly of the centralization of only the industrial part of the schedules—interfered with the satisfactory realization of the plan of the industrial census.

#### AUSTRIA.<sup>1</sup>

No general industrial census had been taken in Austria up to 1901. But the government has made various attempts to secure information in regard to industrial conditions by means of statistical investigations.

The basis for the industrial statistics of the country is to be found in the reports of the chambers of commerce and industry, which since their formation in 1848 have been intrusted with the collection of data relating to industries for submission to the ministry of commerce. For nearly half a century,<sup>2</sup> however, these reports lacked uniformity and completeness.

<sup>1</sup> Oral information was secured from Mr. Richard Reidl, director of the statistical bureau of the chamber of commerce and industry of Lower Austria. Materials were secured from him and from the ministerial advisor, Dr. Victor Mataja, chief of the Austrian bureau of labor statistics.

<sup>2</sup> Cf. Statistischer Bericht über die volkswirtschaftlichen Zustände des Erzherzogthums Oesterreich unter der Enns im Jahre 1890. An das hohe k. k. Handelsministerium erstattet von der Handels- und Gewerbekammer in Wien. I. Band, Vienna, 1893, and Statistische Mittheilungen der Niederösterreich. Handels- und Gewerbekammer, Heft 3. Die Deutschen Gewerbezahlungen und die Reform der Gewerbestatistik in Oesterreich, von Richard Reidl. Wien, 1898, and the sources quoted in both publications.

Certain reforms were introduced by a decree of the minister of commerce on June 6, 1891, as a result of a conference of the secretaries of the chambers of commerce held in January, 1890, at Vienna;<sup>3</sup> but these also failed of the desired effect, and the "statistics of the Austrian industry according to the condition of the year 1890,"<sup>4</sup> although restricted practically to the factories, proved to be incomplete, heterogeneous, and insufficient. In brief, as the ministry of commerce remarked, they did not meet the requirements of modern industrial statistics.

The reason must be sought in the nature and the limited scope of the material forming the basis of the enumeration, for the chambers of commerce in collating these statistics relied upon the records of trade taxes (Gewerbsteuerregister) kept by them. These records constituted in many chamber districts the exclusive, in others at least the main basis of the enumeration. That being the case, errors and omissions were inevitable, since the organization or cancellation of industrial concerns were not regularly and promptly communicated to the chambers. Moreover, the enumeration, as a rule, would include only those concerns for which the assessments of the trade tax had been settled; and owing to the very long duration of the assessment—in Vienna it lasted, on the average, three years—a number of newly created enterprises would not be taken into consideration at all, while, on the other hand, a number of concerns no longer existing would be counted because the cancellations of the trade tax had not been effected at the time of the enumeration.

These and other inconveniences, which resulted from basing the statistics upon records containing only tax data, induced the ministry of commerce to send, at the beginning of May, 1894, a circular of inquiry to all the chambers in order to ascertain their wishes and propositions in this matter. Nearly all emphasized the necessity of a revision of the regulations in regard to trade records. Among the concrete proposals the one which attracted the most attention was submitted to the chamber of commerce and industry in Vienna and explained in detail by the statistical bureau. It coincided with the ideas of the ministry of commerce, which accordingly incorporated its principles in a plan for new instructions concerning the keeping of trade records (Gewerbekataster) and for the taking of industrial censuses through the chambers of commerce. These two projects were sub-

<sup>3</sup> Cf. Protokoll über die am 15, 18 und 20. Januar, 1890, zu Wien im Sitzungssaale der Niederösterreichischen Handels- und Gewerbekammer abgehaltenen Berathungen der Plenar-Versammlung der Sekretäre der Handels- und Gewerbekammern der im Reichsrathe vertretenen Königreiche und Länder betreffend die Reform der von diesen Kammern zu erstattenden statistischen Quinquennial Berichte. Vienna, 1890.

<sup>4</sup> Nachrichten über Industrie, Handel und Verkehr aus dem statistischen Department im k. k. Handelsministerium, LVI Band, I. Heft. Statistik der Österreichischen Industrie nach dem Stande am Ende des Jahres 1890. Vienna, 1894.



mitted to a conference of the secretaries of the Austrian chambers of commerce convoked in Vienna in June, 1895, in which representatives of the central statistical commission and of the ministries of the interior, of agriculture, and of finance participated.<sup>1</sup>

The proposed instructions for keeping the trade records were adopted by the conference almost without change and put into effect by an order of the ministry of commerce issued July 18, 1895.<sup>2</sup> These records had not hitherto been based on the organization and cancellation of concerns, but were founded exclusively upon the communications of the tax authorities announcing the entry, diminution, and cancellation of the trade tax and, in some chamber districts, of the income tax. According to the instructions of 1895, the chambers received in addition regular communications regarding the corresponding official transactions reported by virtue of the provisions of the industrial code.

The Austrian legislation required that the industrial authorities be notified and a permit be obtained before a concern could be started. The dissolution of a concern was also reported to these authorities either directly or through the tax authorities. They were informed, furthermore, of the appointment of a representative, of the granting of a lease, and of its expiration. In case of the death of the owner they were notified of the continuation of the business—permitted by law on the basis of the old license without new notification—on account of the widow or minor heirs. Finally they were apprised of the removal or the rebuilding of the place of business. Hawkers were subjected to special and more rigorous legislation. Their warrant of trade was accorded for only one year; after its expiration it could be renewed for the same length of time. On violation of certain legal prescriptions it was revoked altogether. Other industries carried on itinerantly by special license were subjected to analogous regulations.

By the instructions of July 18, 1895, in regard to keeping the trade records, all these transactions were to be reported to the chambers of commerce on prescribed blanks, which the industrial authorities were to fill out and transmit in the course of the month following the transactions in question.

The blanks arranged in a card catalogue constituted the basis of the trade records. The notifications in regard to trade taxes, which were required to enable the chambers to keep their lists of voters and apporportion the assessments, were transmitted to them as

before and served only as a secondary basis for the records.

The instructions of July 18 provided that these notifications should be transmitted to the chambers by the state financial authorities. This was done by sending to the chambers the quarterly reports furnished by the tax authorities and containing the single entries, increases, diminutions, and revocations of trade tax during the quarter year. In those chamber districts where such reports were not made, special reports made at least quarterly by the authorities assessing taxes were transmitted. Changes in the entries of income were also to be communicated.

As regards those concerns not included in the industrial code (for instance, banks, savings banks, credit institutions, insurance institutions, railways, steamship enterprises, etc.), but subject to the trade tax, these communications from the tax authorities still constituted the main basis of the trade records. In all other cases, however, the concerns were no longer to be entered in the records at the date of the assessment of the tax, but at the date of the granting of the trade license. The latter nearly always coincided with that of the starting of the concern. The agreement of the records with the actual state of the industries was in this way assured. Likewise withdrawal from the records did not take place at the moment of the cancellation of the tax, but upon the receipt of the application for the cancellation of the concern. The data in the trade tax records at the time of the change to the new method were transferred to the blanks of the prescribed form and incorporated in the new records. These are subject to a permanent supervision by comparison with the records of the firms kept by the chambers on the basis of the communications of the commercial courts.

Instructions of July 18, 1895, made the following provision for a simple enumeration of the recorded industrial concerns:

In the year 1896, and in every fifth year following, the chambers shall make an enumeration of all the concerns entered in their trade records according to their condition on June 1, and shall submit the results not later than November 1 of the same year to the ministry of commerce.

In making the enumeration a tabulation blank was used, containing in one column the "classes, groups, and names of industries," in another the "total number of concerns according to the conditions on June 1."

With regard to the filling out of these blanks, the instructions contained the following regulations:

In this blank the industries must be entered with the same designations under which they appear in the trade records; and only designations entirely synonymous—as, for instance, cobbler and shoemaker, tailor and clothing maker—may be combined in one entry.

If several different industries are combined in one announcement—for instance, inn and bakery, flour and saw mill—these industries must be enumerated separately. In the first of these examples one industry will then be credited to the innkeepers and

<sup>1</sup> Protokoll über die im Juni 1895 zu Wien abgehaltenen Beratungen der Secretäre der Handels- und Gewerbekammern der im Reichsrathe vertretenen Königreiche und Länder, betreffend die Gewerbekataster und den nächsten statistischen Quinquennial-Bericht dieser Kammern. Vienna, 1895.

<sup>2</sup> Instruction, betreffend die Führung der Gewerbekataster und die Vornahme von Gewerbezahlungen durch die Handels- und Gewerbekammern. (Erlass der Ministerien des Handels, des Innern und der Finanzen vom 18 Juli, 1895, Z. 39, 628.)

one to the bakers; in the second, one to the flour millers and one to the saw millers.

Announcements which, merely to designate exactly the extent of the concern, contain an enumeration of different goods or operations, the production, sale, or performance of which form the subject of a single industrial concern—as, for instance, “production of carpets and furniture stuffs,” or “carpenter and cabinetmaker,” “cloth and yarn dyer,” “colorer and japanner”—are not to be treated as cumulative announcements but as announcements of a single concern. They are to be enumerated but once. This is especially true for commercial concerns, so that such a one, however many different kinds of goods appear combined in one trade license or permit, shall always be considered as only one concern.

In addition to this enumeration the combinations of industries appearing in the form of cumulative announcements were to be separately enumerated in a special statement on the same blank.

Finally a statement was to be made out for all the cases in which two or more concerns were joined within the same commune in the hands of one and the same industrial person.

The first enumeration on the basis of the new trade records was to be effected in the year 1896, representing the conditions on June 1. As, however, several chambers reported that the preparation of the new records had not yet advanced sufficiently to allow the expectation of a favorable result, the date of the enumeration was postponed to June 1, 1897.

It will now be in order to consider briefly (a) what were the main defects of the material available to the chambers; (b) how they used it; and (c) how the central authority revised it.

(a) *The defects of the material.*—(1) The fundamental prerequisite for making the enumeration was the existence of the trade records. At the date of the enumeration such records, in a more or less satisfactory condition, were kept by 26 of the 29 chambers. The three Dalmatian chambers of commerce and industry could not afford the expense and the men required for this work.

(2) On account of the different sources from which the material came, it proved impossible to keep the trade records in such a state that they always gave an absolutely true and up-to-date picture of the facts sought for.

(3) Another defect of the trade records, resulting, even more than the one just mentioned, from the fact that they originated from the old trade tax records, was the insufficiency of the designations of industries. According to the reports of several chambers, 80 per cent of the total designations of industries were taken from these old records. In numerous cases they gave only an indefinite, sometimes even an entirely incorrect, idea of the specialty of the single industrial concern.

(4) The cumulative announcements did not offer any special deficiencies other than those already mentioned, although it seems that they did not always make it certain whether the concerns referred to were combined concerns, either in the sense of the indus-

trial code or from the technical or economic point of view.

(5) With regard to the statements to be made about the cases, in which two or several industries within the same commune were joined in the hands of one and the same industrial person at the date of the enumeration, the majority of the chambers reported that the records did not contain evidence by which the identity of industrial persons with the same name could be determined.

(6) Because of the above-mentioned inaccuracy in many designations of industries, the records did not always make it possible to determine whether the concern was subject to the industrial code, etc., and was therefore to be included in the enumeration.

(b) *The use the chambers made of the trade records.*—(1) The three Dalmatian chambers which did not keep trade records could not, of course, make the enumeration required, although one of them at least tried to supply the data from other sources.

(2) Several chambers stated later on that they had enumerated on the basis of their trade records some concerns which were not in business at all, or were no longer in operation at the date of the enumeration, and that, on the other hand, they had not included some existing concerns, because at the time of the enumeration they were not yet entered in the trade records.

(3) The chambers tried by special researches to get a better insight into the specialty of the individual concerns for which the notification in the trade records was not exact enough (as in the case of sculptors). But their attempts to remedy the faults resulting from vague statements (such as “mixed goods shop”), were successful only in a few cases. Moreover, the same “designations” of industries were not always entered under the same “kinds” of the systematic register. On the whole, the classification made by the chambers did not prove to be quite satisfactory.

(4) On account of the insufficiency of the records, 15 of the chambers declared it impossible to state the cases in which two or several concerns within the same commune were united in the hands of one and the same industrial person.

(5) The uncertainty as to whether certain concerns were subject to the industrial code or not induced some chambers to enumerate all the enterprises found in the trade records. Others excluded from the enumeration only those which beyond doubt were not subject to the industrial code and included all the doubtful cases.

(c) *Verification of the material by the central authority.*—(1) The instructions provided that the chambers submit their reports by November 1, 1897; but the majority submitted their material in the spring of 1898, and some did not send it until the summer of 1898, or even the spring of 1899; while, as already stated, from two of the Dalmatian chambers no material was received, so that the central authority



was obliged to dispense with their cooperation and tried to obtain the missing information in other ways. Application was made to the ministry of finances, which thereupon transmitted to the ministry of commerce a statement made out on the basis of the material of the tax authorities in regard to those enterprises subjected to the trade tax in the three Dalmatian districts. As one of the three chambers had in the meantime sent a report made out by methods analogous to those applied by the ministry of finances, the latter's reports were used only for the two other districts. Because of these delays in the delivery of the reports, the sifting and preparatory verification of the material did not begin until June, 1898. The result was that from a considerable number of chambers some of the required statements were still lacking. To obtain these and to supplement others a correspondence was entered into which proved in some respects quite successful.

(2) With regard to the lack of uniformity in the treatment of the different branches of industry, the central authority tried, on the basis of the tax legislation, to remedy it to some degree. But, of course, researches in regard to the accuracy of the records used were impracticable.

(3) In the same way the central authority, assuming that the chambers had done their utmost to secure exact information about the specialty of concerns entered inaccurately in the trade records, made no change in the designations. But it tried—not always with success—to rectify the lack of uniformity resulting partly from the differing entries in the trade records and partly from the mistakes in the classification, which was sometimes too mechanical. As the Dalmatian statements contained only "kinds" of industry, the register of "designations" could not be made use of there.

(4) A verification of the cumulative announcements as reported by the chambers showed the necessity of a repetition of the entire enumeration of these concerns. Many designations treated as cumulative announcements and divided under the several industries specified proved to represent but one industry, and vice versa, and the investigation by the central authority was therefore conducted entirely from the technical and economic point of view.

(5) Since only fifteen chambers made statements about the cases in which two or several concerns within the same commune were in the hands of one and the same industrial person, the central authority abandoned the use of this data altogether.

(6) The elimination of the industries not to be enumerated led to various complications as a result of the lack of uniformity in the proceedings of the chambers. With regard to the bathing establishments, the majority of the chambers had given data only about those subject to the industrial code. The cen-

tral authority, after making additional researches which proved to be partly successful, concluded that their inclusion would be a less serious error than their omission altogether. Analogous considerations led to the inclusion of the banking, money, exchange, account business, and the like, although they might comprise enterprises which were exempt from the regulations of the industrial code. On the other hand, private business agencies, not being returned by the majority of the chambers, were excluded, although under this designation some concerns may have been reported which had as their exclusive object the mediation of commercial transactions and should therefore have been enumerated. It follows that some concerns subject to the industrial code were excluded, while others exempt from it were enumerated.

A few additional remarks may be made about the meaning of the unit which was affected by the fact that the enumeration was an enumeration of records rather than of concerns themselves.

It has been seen that with a few exceptions only those concerns were enumerated which were subject to the industrial code.

There being no indication in the records of whether the concerns were in operation at the date of the enumeration or not, all were treated alike.

Moreover, the number of enumerated records might not have agreed with the number of really existing concerns, as one concern may have been operated on the basis of several licenses corresponding to the different branches of the industry and entered separately in the trade records, and so may have been enumerated several times.

Finally the records, emanating mostly from the old trade tax records, contained main enterprises as well as branch establishments. The latter, however, comprised mostly only such as were separate establishments from the standpoint of the tax legislation and without regard to the existing trade regulations.

The Austrian labor office itself came to the conclusion that neither in its basis nor in its extent, nor even with regard to the special features to which it related, can an enumeration like that of 1897 replace an industrial census.

The idea of taking an industrial census in connection with the general population census had been entertained as far back as 1890. Circumstances hindered its realization at the population census of that year. It could not be carried into effect until 1901, the first general industrial census of Austria being planned for April 10, 1901, on the basis of the general population census of December 31, 1900. The information at hand in regard to this census is not utilized here, since this report restricts itself to the censuses taken up to January 1, 1901.

Of the other countries in Europe, none has ever taken a general industrial census or, like Austria, at-

tempted on the basis of existing records to make an enumeration of the manufacturing and handicraft concerns. The purpose of the present report, therefore, seems to be fulfilled. But it may be interesting and not inappropriate to touch upon the industrial investigations which have been undertaken to supply the lack of a census in some of these other countries. The methods followed in making such investigations in Switzerland and in the United Kingdom will serve as illustrations.

#### SWITZERLAND.<sup>1</sup>

No general industrial census has yet been taken in Switzerland. On three occasions, however, returns in regard to the establishments subject to the factory inspection have been collected, conforming to the same principles and referring to the same date throughout the whole country. Although these investigations were intended to cover only certain establishments beforehand, and thus can not be strictly considered as censuses, they included a very large part of the industrial workers, and for that reason it seems worth while to give a brief account of the methods followed. It must be borne in mind, however, that the establishments to be included were not determined by any statistical criteria but indirectly by the characteristics which made them subject to the factory legislation. It will be necessary, then, to state first these characteristics.

The fundamental law inaugurating the factory legislation in Switzerland was the "federal law, regarding the work in the factories, of March 23, 1877,"<sup>2</sup> issued three years after the adoption of the federal constitution. Section I of this law reads as follows:

Every industrial establishment, where a more or less considerable number of workers are simultaneously and regularly employed outside their homes and in an inclosed place, is to be considered as a factory and subject to the provisions of this law.

When there is doubt as to whether an industrial establishment is or is not to be ranged in the category of factories, the federal council decides in the last instance, after having previously taken the advice of the government of the canton.<sup>3</sup>

In the main the definition given in this section of the law determined the scope of these investigations. The first took place in May, 1882,<sup>4</sup> the motive of which was the national exhibition planned for the year 1883. In the meantime a number of regulations had been

issued defining or specifying more precisely the scope of the term "factory." In general, everything that could be considered as a simple carrying on of manual work or small industry was to be excluded. But it appears that such considerations as the danger to the health and life of workmen, the employment of children, the use of motors, the factory-like character of the method of work, the number of looms, etc., might justify the inclusion of establishments which would not perhaps come under the general definition of factory as formulated in the law of 1877. On the basis of these or other considerations the following industrial establishments were among those expressly enumerated as belonging in the category of factories: Dye works and cement works, "although largely carried on in the open air or at least in places not entirely closed;" straw plaiting, "although it frequently presents itself as a simple manual trade carried on on a small scale and most often during a rather short period of the year;" tobacco and cigar mills; finishing works, "inasmuch as there is in question the industry of textiles unbleached and bleached;" elastic manufactories, "even if the work is done only by hand;" embroidery workshops with three or more looms, "in case the members of the family are not the only persons occupied;" brick works "operated with the help of motors and occupying a large number of workers;" wood carving, if "carried on in entirely or partly inclosed places in which motors are used and more than 5 workers are employed;" printing works operated with motors and employing more than 5 workers; and illuminating gas works employing more than 5 workers, whether with or without motors. It was decided that mines were not subject to the factory law; that corn mills and breweries employing only adult persons who as a rule lived in the home of the employer were not to be considered factories; neither were finishing works where the retouching, cutting out, ironing, and folding of embroidery articles was done.

Such were some of the principal regulations up to March, 1882, by which the establishments subject to factory inspection, and therefore included in this statistical investigation, were determined. It is evident, as already remarked, that they did not start from any statistical basis. They included, on the one hand, very small concerns and excluded, on the other hand, very large ones; for instance, all the "finishing mills," out of which, as stated in the justification of the circular ordering their exclusion, 10 per cent employed 25 or more workers. The regulations were, moreover, so vague that they were necessarily not uniformly followed in the different cantons. In some their application was carried to an extreme; in others a larger or smaller number of establishments were omitted which it was the intention of the legislature to include. On the whole the scope of the investigation of 1882 in regard to the number of employees by sex and age (14 to

<sup>1</sup> Oral information was secured in the federal department of industry of Switzerland.

<sup>2</sup> La loi fédérale concernant le travail dans les fabriques, du 23 mars 1877, commentée par son exécution pendant les années 1878 à 1899. Publié par le département fédéral de l'industrie. Lausanne, 1900. (The law is erroneously dated 1887 on the cover and the title page of this publication.)

<sup>3</sup> The Helvetic confederation consists of 24 sovereign cantons.

<sup>4</sup> Schweizerische Fabrikstatistik, die dem Bundesgesetze betreffend die Arbeit in den Fabriken, vom 23. März 1877, unterstellten Etablissements umfassend. Auf Grundlage der im Mai 1899 vom eidgenössischen Fabrikinspektorat in den Fabriken der Schweiz vorgenommenen Erhebungen, herausgegeben vom schweizerischen Handels- und Landwirtschafts-Departement. Bern, 1883.

16 years, 16 to 18 years, and over 18 years) and the motive power employed (horsepower of water, steam, gas, hot air, horses) can not claim much credit from a statistical standpoint.

To secure a basis for certain legislative measures a similar investigation was made in 1888.<sup>1</sup> Although this still presented the same fundamental lack of any uniform statistical characteristic in the factories included, its scope was somewhat more extended than in 1882, and the application of the factory act seems to have become more uniform. The following regulations had been formulated in circulars issued by the Federal Council to the cantonal governments:

The Jacquard weaving workshops having more than 5 workers who work in one or several places belonging to the same proprietor, must be considered as factories in case the looms are moved or provided with lead weights. If these workshops present neither of these two conditions, they will be treated as factories only in case they employ more than 25 workers. (Circular of November 29, 1884.)

All the establishments and workshops for polygraphical arts employing more than 5 workers are to be subject to the law. (Circular of April 17, 1885.)

The mills and breweries employing more than 5 workers are subject to the law. (Circular of April 13, 1886.)

This last provision was modified by the circular of September 2, 1886, as follows:

The classification adopted in the circular of April 13, 1886, in subjecting to the law the mills employing more than 5 workers, is extended to all the mills employing more than 2 workers who are not all members of the family of the proprietor.

The investigation covered all the establishments, both in operation and idle, subject on December 31, 1888, to the factory act and secured about the same kind of information as the investigation of 1882. The differences were that among the employees only those of less than 18 years and those of 18 years and over were distinguished, and that the hot air and animate motors which had practically disappeared were no longer asked for. A question was put about the maximum and minimum number of employees occupied during the year 1888, and the horsepower of the electricity used was asked for.

In comparison with the two investigations of 1882 and 1888, the recent investigation of 1895,<sup>2</sup> made on account of the national exhibition to be held in Geneva in 1896, presented one essential improvement. On June 3, 1891, the following decree was issued by the Federal Council:

There will be considered as factories in the sense of article 1 of the federal law regarding the work in the factories of March 23, 1877, and made subject to the same law in so far as they correspond to the general conditions mentioned in the quoted section:

(a) The concerns which employ more than 5 workers and use mechanical motors, or employ persons less than 18 years of age, or present particular dangers for the health and the life of the laborers;

(b) The concerns employing more than 10 workers and presenting none of the conditions mentioned under a;

(c) The concerns employing less than 6 workers and presenting exceptional dangers for the health and life of the workers, or those employing less than 11 workers and presenting the evident characteristics of factories.

The investigation of 1895, then, covered all the industrial establishments, both in operation and idle, which occupied 10 or more workers outside of their homes and in inclosed places, and, in addition, a large number of other establishments employing fewer workers. The questions were more numerous than those put in 1888. They included the nationality of the laborers, the hours of work by the week, the necessary number of horsepower under the normal operation, etc.

Since the methods followed at the taking of the three investigations were practically the same, it will be sufficient to describe only those of the recent investigation of June 5, 1895.

This investigation was ordered by the department of industry with a view to preparing for the national exhibition at Geneva a description, as complete as possible, of the manufacturing industries of Switzerland and of their development.

The investigation was made by 9 factory inspectors. They had to provide the enumeration cards, the printing of which was done at different places after approval was obtained from the department of industry. The factory inspectors then sent these to the manufacturers, finding their addresses in the lists of factories which were prepared and kept as a part of the execution of the factory act.

The establishment as entered on the list, however, was not accepted as a unit for the investigation, for in case several branches of industry, which as a rule were separately conducted, were joined in one establishment (for instance, spinning and weaving, a flour and a saw mill) and carried on to such an extent that each single division could very well represent an independent concern; these divisions, entered in the factory list as one establishment, were to be separately treated in order to secure more correct data regarding the individual branches.

There was no way of compelling the manufacturers to fill out the schedules, so the success of the undertaking depended entirely on their good will. It was therefore decided to put but very few questions, and only such as the proprietor of the establishment could answer without difficulty and, if necessary, the factory inspectors could verify.

Nevertheless the questions were more detailed than at the former investigations. Thus the adult workers were subdivided into those under and those over 50 years of age. A new question regarding the nationality of the workers employed in the factories was introduced, on account of the constantly increasing number of immigrant workers. It also seemed desir-

<sup>1</sup> Schweizerische Fabrikstatistik umfassend die dem Bundesgesetz betreffend die Arbeit in den Fabriken, vom 23. März, 1877, unterstellten Etablissements.

<sup>2</sup> Schweizerische Fabrikstatistik nach den Erhebungen des eidg. Fabrikspektors vom 5 Juni, 1895, herausgegeben vom Schweiz. Industrie Departement. Bern, 1895.

able to ask the weekly number of working hours, in view of the ever stronger agitation for a reduction of the hours of labor. It was here expressly requested that the periods of rest fixed by the factory regulations or in the working plans should be deducted and only the actual normal working time be considered. In the question about the motive power it was this time exactly determined how many horsepower were required under normal operation and how many were available, with the water at a normal mark and with a normal use of the various kinds of motive power, reserve engines included.

#### HUNGARY.

*Early industrial censuses.*—Hungary, by the acknowledgment of its constitution on June 8, 1867, received its administrative autonomy and independence from the Empire of Austria. On December 23 of the same year the governmental statistical council created at the organization of the new government elected a commission to make the preparations necessary for an investigation of Hungarian industries. The commission prepared a set of forms and instructions, and in the following year submitted an extensive report of its discussions, but no further steps were taken until the establishment of the governmental statistical office on April 18, 1871. The new office judged that, since a general account of the industrial persons had been obtained by the recent population census of 1869–70, the time was ripe for securing, by a special census, insight into the conditions of industry. Such a census was all the more opportune because of the necessity for inaugurating industrial legislation.

The statistical office submitted the forms prepared three years before by the commission of the statistical council, and proposed to take the census in the second half of the year 1871; but the same obstacle which lay in the way of former attempts, namely, the want of executive authority, again hindered the execution of the plan, and the matter was dropped.

It was only after the next population census of 1880–81 that the statistical office, in view of a national exposition, took the matter up again. On February 28, 1883, it submitted a "memorandum regarding the investigation of industrial statistics to be made in the year 1883." The project, after being again postponed and undergoing essential changes, such as the omission of the inquiry in regard to the value of the annual product, was finally put into effect in 1884. In the fall of 1883 a general schedule was forwarded to each manufacturer. The inquiries referred to the kind of industry, the number of partners, the number of employees distinguished by age as under or over 16, the number of helpers and laborers by sex, of apprentices, of persons employed out-

side the workshops, of temporary employees by sex; also the number and kind of motors and machines in use. If the use of motive power was affirmed, a second schedule was sent, making inquiries as to the power, the oil presses, locomobiles, turbines, pressure engines, steam engines, boilers, gas motors, and petroleum motors. The independent millers received, besides, a special and very detailed schedule.<sup>1</sup>

In addition to this main census a special census of domestic or house industries was ordered in the beginning of the year 1884. Every commune received one schedule for each of these industries. The inquiries referred to the number of persons by age—over or under 16—and by sex; the number of looms, sewing machines, or other machines; the approximate value of the total yearly production; and the season of the year during which the people were engaged. The results, however, seem to have been very deficient. The many supplementary researches and rectifications not only failed to make good the deficiencies, but were so delayed that the census does not refer to the same date, nor even to the same year. The original inquiries were mostly answered at the beginning of 1884, while the information obtained through supplementary researches relates to conditions in 1885.

The investigations at the beginning of the seventies, as well as the one of 1884–85, had been undertaken for particular, practical purposes. In absence of any such special motives the government lost sight of the matter, and no further attempt has been made to take a special general industrial census in Hungary. But the population census of December 31, 1890, has been taken as the basis for an industrial census, and it is this census which has to be looked upon as the first general industrial census in Hungary.

#### THE INDUSTRIAL CENSUS OF 1890.

*Origin.*—The chief motive for securing statistics concerning the entire industry of the country was to obtain a basis for adequate industrial legislation. This the government judged indispensable. The royal Hungarian statistical bureau believed that the statistics should be procured through a general population census, and not, as before, through a special industrial census, for the reason that the latter did not embrace the whole population, and consequently the individuals to whom it did apply could evade it. The census of 1873, it was said, failed completely on this account; the royal Hungarian statistical bureau itself having openly acknowledged the complete uselessness of the data obtained. It was true that the census of 1884 had been somewhat more successful, but here again

<sup>1</sup> A special investigation of the mill industry, which refers to the beginning of the year 1885, was preceded by similar investigations in the years 1863 and 1873 and followed, for the millennium exhibition held in Budapest in 1896, by an investigation in 1895.

the failures inseparably connected with special investigations of this sort could not be avoided.

As the industrial census was to be taken in connection with the general population census, its formal origin coincides with the history of the latter. In July, 1889, the director of the royal Hungarian statistical bureau submitted to the minister of commerce a memorandum in regard to the census to be taken at the end of 1890. The minister of commerce thereupon requested the royal statistical bureau to draft a bill for the census. This bill was referred to the governmental statistical council,<sup>1</sup> which approved it in the main, and proceeded to consider the forms to be used in the census. The minister of commerce, in the meantime, submitted the bill to the national Diet. It was accepted by both houses practically without modification—only one word being changed—and was sanctioned by the King on March 31 and published on April 4, 1890. The forms to be used were not definitely determined upon until later. The "general instructions for the execution of the census" were issued by the minister of commerce on August 7, 1890.

*Legislation for the census.*—The census law ordered a general population census, applying to the conditions prevailing on December 31, 1890, to be taken between January 1 and January 10, 1891, under the supervision of the county and city authorities. A census of public and private buildings was to be taken at the same time. It was made the duty of every person to furnish the data relating to himself, his family, his relatives, and to the inhabitants (members of his household) as required by the census schedules to be prepared by the minister of commerce. Any evasion of the census, or intentional misstatement or willful delay in answering, constituted a misdemeanor and was punishable by a fine not exceeding 50 florins (\$20.10). It had been suggested that, since the furnishing of the data was obligatory, it would perhaps be well to include in the law all the questions that were to be answered. But this idea was rejected, on the theory that the execution of the census, and consequently the determination of the method and the formulation of the questions, properly devolved upon the executive branch of the government. Accordingly these details were left to be arranged by the minister of commerce, to whom the execution of the law was entrusted. The law placed at his disposal an appropriation of 200,000 florins (\$80,400) for the expenses of the census.

The law conformed closely to the one under which the census of 1880 had been taken. (In the opinion of the Hungarian authorities, not only was that

census entirely satisfactory as regards the general system adopted, but it surpassed in methods and wealth of data the foreign censuses taken since that time. Accordingly it served as the model for the new census.) But the scope of the latter was, as already remarked, broadened to cover the field of the special industrial censuses as well as that of the regular population censuses. The law, however, contained no reference to any investigation of industries. The plan for that part of the census was drawn up by the assistant director of the royal statistical bureau and not sanctioned until after the law authorizing the census had been enacted.

*The date.*—The date of the industrial census was largely determined by the consolidation with the regular population census. There is, to be sure; no general law prescribing a decennial census in Hungary. But there are special laws—for example, those referring to the proportion of imperial recruits to be furnished by the two countries of Austria and Hungary—which presuppose a decennial census; and as the last population census had been taken in 1880, another had to be taken in 1890. The date selected, December 31, was the same as that of the previous census and conformed to the recommendation of the international statistical congress.

*The administrative authorities.*—Although the census law contained regulations for the total territory of the Hungarian crown, the measures for its execution, on account of the independent interior administration of Croatia-Slavonia, had to be approved by the governor of these countries, and a few inconsiderable changes in general instruction and in the regulations were introduced on account of differences of administrative organization.

It was assumed that the census forms discussed by the statistical council would be used in the whole country, but it was stated that in case certain counties wished to collect other data regarding local conditions at the occasion of the census, permission would be granted on application to the minister of commerce.

According to the law the forms were to be furnished by the minister of commerce.

The census was to be taken under the supervision of the head official of the city or county.

In his memorandum submitted to the minister of commerce the director of the royal statistical bureau said that first of all it should be distinctly understood that the royal Hungarian statistical bureau was to be entrusted with the direction of the census and the editing of the publication. The working up of the material for Hungary was to be done by the royal Hungarian statistical bureau pertaining to the ministry of commerce; for Croatia-Slavonia, by the Croatian statistical bureau.

<sup>1</sup> This is a permanent body, composed of representatives of the several ministries and of elected professional experts, with the minister of commerce as chairman.

## I. PREPARATIONS.

*The division of the country.*—The census law begins with the statement that the census was to be taken in the territory of the countries of the Hungarian crown.<sup>1</sup> The general instruction issued by the minister of commerce decreed that the county or city was to be subdivided into enumeration districts, in such a manner that each enumeration district would contain from 500 to 1,000 inhabitants. But as the law ordered that the census be taken through the communal or municipal authorities, and as the commune (koeszég) constituted the basis of the enumeration, the general instruction added that each commune, even if it contained less than 500 inhabitants, and also each heath (puszták), settlement (telepek), etc., forming a separate tax commune, should constitute one enumeration district. The barracks and the buildings rented by the military treasury formed distinct districts. The further subdivision of the country was entrusted to the counties and cities.

*The distribution of the forms.*—The law stated that the minister of commerce would furnish gratuitously the forms necessary for the census. The general instructions added:

The minister of commerce entrusted with the execution of the census law forwards the schedules and instructions to the counties, which must provide for the further distribution. After defining the enumeration districts, the head official of the county will report to the royal Hungarian statistical bureau the approximate number of inhabitants in each district, in order that the forms may be sent in adequate quantities.

The census law ordered, for the expenses devolving upon the government, an extraordinary appropriation of 200,000 florins, or \$80,400, to be made to the minister of commerce. Out of this, 50,400 florins, or \$20,260, was charged up to the expenses of the fiscal year 1890. The general instructions added:

The expenses for the forms necessary for the execution of the census are borne by the state. The costs for the taking of the census are to be borne by the communes.

*The organization of the staff.*—(a) The higher officers: The statistical council resolved that the general direction and supervision of the census should be entrusted to the head official (első tisztviselő-jének) of the county in Hungary, and to the authorities of the counties and cities (megyei és városi törvényható-

<sup>1</sup> The countries of the sacred Stephens crown (a Szt.-jstván korona országában) are 1, Hungary; 2, the city and territory of Fiume; 3, Croatia-Slavonia. The existing administrative subdivision of the country may be briefly given here. Hungary consists of 7 provinces (országosz). Each province consists of a number of counties (törvényhatóság) which are either ordinary counties (vármegyék, megye) or cities (városok), the total number of counties being 63, of distinct cities 25. Likewise Croatia-Slavonia consists of 2 provinces, containing 8 counties and 21 cities, while Fiume is composed of the city and the territory of Fiume (kerenlete). Each ordinary county in Hungary is subdivided into towns (rendes tanácsú városok), numbering 106, and districts (járdás), the latter into 12,555 large and small communes (kis-és nagykoeszégék).

ságok) in Croatia-Slavonia. This resolution, as has been seen, was incorporated in the law.

(b) The enumerators: The general instructions directed that the more intelligent and reliable inhabitants of the place or region—such as officers and sergeants out of service, clergymen, school teachers, proprietors of land, lessees, economic officers, lawyers, merchants, etc.—be selected as enumerators. The town clerk (koeszégi [Koer] jegyzoe) had to take, ex officio, one enumeration district. It was considered desirable to have enumerators who were familiar not only with the language of the region in which their districts lay, but also, if possible, with the Hungarian language. In case the communal authorities, at the suggestion of the corresponding administrative authority (head official of the district or mayor of the town) were, for any reason, judged unable by the head official of the county to take the census, and if, also, among the above-mentioned persons nobody could be found, the head official of the county was authorized to appoint other working forces. The salaries to be paid in such cases were determined by the head official of the county and borne by the communes.

*Special measures to guarantee the trustworthiness of the individual canvass.*—Certain steps were taken to promote the accuracy of the individual returns. They were intended to allay the suspicions of the people with regard to the purposes of the census, to impress them with the obligation of answering, to instruct them, and to awaken their interest.

The minister of commerce said in his instructions to the counties:

In order that the census work may not, in any part of the country, encounter the erroneous idea that it is an investigation which might possibly lead to an assessment of new burdens or an increase of the taxes, I require the county, in case any indication of unfounded fears of this description should arise in its territory, to disperse them immediately and to properly inform the persons concerned.

At the same time the law contained a provision—inserted at the suggestion of the statistical council—which stated that the designation of the home right (that is, the right to be treated as a resident of a commune from the standpoint of pauper legislation) in the census schedule did not establish this right.

To oblige the public to make the required statements, the law decreed that whoever intentionally evaded the census, or knowingly made a wrong statement, or deliberately delayed the termination of the work, was guilty of a misdemeanor and liable to a fine not exceeding 50 florins (\$20.10).

With the same purpose in view, the general instructions added that the house owner was to attest with his signature the accuracy and completeness of the filling out of the schedules.

The general instructions stated also that the enumerators and supervising officers were obliged to enlighten the persons concerned on the basis of the in-



structions, explanations, and forms. In the same way the special instructions to the county officials said:

The main condition of success is that the nation itself cooperates as much as possible in the census, and that the more intelligent citizens of the country participate as zealously as they can.

## II. THE ENUMERATION.

*The unit of the census.*—Since the inquiries referring to the industrial census were indiscriminately addressed to every person, whether he was engaged in an industrial or other pursuit, and since the plan of treating the industrial concern as the unit was not regarded until the time came for working up the material, the single member of the population constituted the unit so far as the census taking was concerned.

*The finding of the concerns.*—As the single inhabitants formed the basis of the industrial census, the finding of the industrial concerns depended on finding the single inhabitants. The instructions for the filling out of the schedules only add, with regard to the finding of the single persons in each house, that the enumerator was to provide the house owner or his substitute with a proper number of individual schedules, and that the latter had to distribute these among the single households.

*The method of canvassing.*—The forms used in connection with the census were the following:

1. The enumeration schedule.
2. The instructions for filling out the enumeration schedules.
3. The house schedule.
4. The general instructions for the county officers and the enumerators.
5. The district (city or county) reviews.

The main schedule was the enumeration schedule. It was a single sheet, white for men and blue for women (8.8 inches long and 6.8 inches wide), printed on one side. It contained at the head the individualizing statement (county, district, commune, heath, etc., city, ward, street, house number), and was subdivided into two parts—the left for the questions, the right for the answers, with one line for remarks.

The questions were twelve in number, ten<sup>1</sup> relating to the merely personal and two to the economic conditions (occupations, industry) of the population. While the former correspond completely to those of the census of 1880, the latter, which, as has been indicated, formed the basis for the industrial census, underwent an important change. At the census of 1880 their wording for the males was as follows:

What is your principal occupation or your principal industry? (Are you farmer, industrial person, merchant, officer, soldier, in the navy, or in the militia?) Have you also a secondary industry, and what?

What is your industrial position? (Are you proprietor of land, lessee, merchant, master, journeyman, apprentice, day laborer, servant, etc.?)

<sup>1</sup>The enumeration schedule in use in Budapest contained two additional personal questions.

The corresponding questions for females were:

What is your principal industry? (Are you employed merely in the household, in an industry, in agriculture, etc.?) Have you also a secondary industry, and what?

What is your industrial position? (Are you manager, servant, day laborer, etc.?)

At the census of 1880 the returns to these questions were so deficient and untrustworthy that a revision of them was judged necessary for the census of 1890.

The form of these occupation questions was the subject of considerable discussion. The governmental statistical council, in the session held on September 17, 1889, considered the matter at length and resolved that it would be wiser to put only the question: "What is your principal occupation?" The expression "industry" was regarded as superfluous, and the inquiry referring to the secondary occupation as fruitless. It was, furthermore, decided that the mention of the more important branches of occupations should be omitted this time. The statistical council started from the idea that it would be better if the statement was made as directly as possible by designating the occupation. This solution, however, seemed insufficient, and those who studied the question practically and minutely felt that, on such a basis, it would be as impossible to obtain industrial statistics as it was with the questions of the year 1880. The assistant director of the royal Hungarian statistical bureau maintained, in a lecture held on March 10, 1890, in the Hungarian Academy of Sciences, that the safest way to state the occupation of the population was by putting the following six inquiries:

1. What is your occupation or industry (office); in what branch of production, transportation, or industry are you engaged?
2. Have you a secondary occupation; and if so, what?
3. Are you independent or in a dependent position?
4. In case you are not independent, in what position and by whom are you employed?
5. In case you are an industrial person, state whether you are engaged in the factory, manufacturing, or domestic industry?
6. In case you are not a breadwinner, a member of the family occupied in the household, or a domestic servant, what is the occupation of the head of the family or the household?

The main object aimed at in these inquiries was to obtain a reliable and sufficient basis for a detailed industrial census.

*The inquiries.*—The director of the royal statistical bureau had recommended that the inquiries of the year 1880 be in the main repeated. He called attention to the fact that the enumeration cards of that census fulfilled the requirements of the resolutions adopted by the International Statistical Congress at St. Petersburg in 1872, and furnished the basis for a detailed demography. The only change of importance referred to the question regarding occupation and industry. The origin of these questions has already been described. A motion—made in the statistical council—to ascertain the number of factories operated

only during a part of the year and the number of laborers usually employed in them was rejected.

The inquiries on the enumeration schedule referred to (1) name; (2) day of birth; (3) place of birth; (4) place of home right; (5) religious confession; (6) mother tongue and other native language spoken; (7) conjugal condition; (8) principal and secondary occupation; (9) whether independent or in a dependent position; if dependent, in what position employed; if a dependent industrial person, in what enterprise or by what master employed; (10) if not a breadwinner or domestic servant, the principal occupation of the supporter; (11) whether able to write, to read; (12) whether sick, how long. (Remarks, whether blind, deaf and dumb, insane, or idiotic.)<sup>1</sup>

The inquiries for the two sexes differed only in one detail. Question 10 for males was:

In case you are not a breadwinner or domestic servant, what is the principal occupation of your supporter?

The wording of the corresponding question for females was:

In case you are merely a family member employed in the household or a domestic servant, what is the principal occupation of your maintainer (husband) or supporter?

### III. THE REVISION.

*By the enumerators.*—The filled-out enumeration schedules of the single households were to be collected by the house owners on or before January 5. These schedules, together with the house schedule, were then to be collected by the enumerator and verified. No indication of the method of verification seems to have been given. The only regulation touching upon the termination of their duties provided that the enumeration was to be finished by January 10, and that the total census material was then to be transmitted to the supervising administrative officer.

*By the supervisors.*—With regard to the duties of the supervising officer, the general instructions stated that he was to ascertain the accuracy of the census, supplying or rectifying, on the spot, the deficiencies and mistakes in the single rubrics and items of the enumeration schedules transferred to him. He was, moreover, to effect the verification in such a way that the schedules of at least one household in every larger house, or where the houses were smaller, the schedules of the occupants of at least three houses in each enumeration district, were verified.

Supplementations and corrections were to be certified by his signature as originating from him.

In case the rectifications or supplementations could not be made, or if the attempt to make them met with

opposition, the census was to be retaken under the supervision of the head official of the county through the officers to be selected by him and at their expense.

After the verification, the enumeration schedules, tied together by households and arranged by houses, with the corresponding house schedule, were to be delivered in the cities to the mayor; in the counties to the head official of the district (a járdsi szolgabíró), with a certificate stating the number of the schedules.

*By the local authorities.*—The third verification was made by the mayors of the cities or the head officials of the districts. It must then be borne in mind that in the verification by the supervisors the communal divisions had already been partially disregarded, since in cases of small communes the supervisor verified the returns of several, while, on the other hand, in the cities and towns he had verified only a part of one commune.

With regard to the duties of the head official of the district, the general instruction ordered that, after having ascertained by the communes the termination of the census, he should combine the first result in a single statement, the "district review." This he transmitted to the head official of the county, with the total census material, not later than January 25, 1901. The district review had one line for each commune and for each heath, settlement, etc., constituting a separate tax commune. The headings were: (1) Marginal number; (2) name of the commune, heath, or settlement, etc.; (3) character of the commune (whether it is a "large commune" or a "small commune," or a heath, or a settlement, etc.); (4) the number of house schedules, filled out; (5) white enumeration schedules, filled out; (6) blue enumeration schedules filled out; (7) remarks.

The towns likewise, but without making out such a review of the results, sent the census materials to the head county official.

The mayors of the cities were to enter the city wards in the district reviews instead of the communes, and, not later than January 25, send the total census material directly to the royal statistical bureau.

The head official of the county, after the census material had been received from every district and every town, made out a "county review," similar to the district review, in which instead of the names of the communes those of the districts or towns were entered. He was then to send the total material packed by districts to the royal statistical bureau not later than the end of January.

*By the central authorities.*—After the material verified by the minor administrative authorities had come in, and a preliminary tabulation of the occupation statistics had been made, the statistical bureau selected out of the large personnel connected with it a number of the most capable. To each member of this second group of revisers an administrative district was

<sup>1</sup> The enumeration schedules in use in the city of Budapest contained two additional questions referring to the relationship to the head of the household, or the position in the household, and, in case of absence from Budapest, the duration of absence and the actual place of sojourn.



assigned, and he thereupon proceeded to revise the preliminary tabulation and verify the raw material, especially with regard to its proposed use for industrial statistics.

The statistical bureau concluded that the administrative authorities showed an appreciation of the purpose of these supplementary inquiries, recognized their intention, and—with a few exceptions—proceeded with a thoroughness and a conscientiousness adequate to the importance of the work.

According to the report of the bureau, the total number of industrial persons returned as employers who could not be found in the census material was, for the countries of the Hungarian crown, 2,952. This number represents only nine-tenths of 1 per cent of all the enterprises. Of the 2,952 employers not found, 2,700 belonged to Hungary proper, of which 1,300 were in the capital, Budapest. Among the helping personnel there were 4,783 individuals who did not give an employer. This number constitutes only 1.17 per cent of the total helping personnel.

The bureau then concludes:

The smallness, on the one hand, of the number of employers stated but not discovered, and, on the other, of the number existing but not determinable because of the lack of statements, prove the serviceableness of the new method based on the information obtained from the helping personnel. We can therefore, in view of the favorable result, confidently state that the method of the population census from the point of view of the industrial statistics has stood the crucial test.

#### GREAT BRITAIN AND IRELAND.

No general industrial census has yet been taken in the United Kingdom. A partial census, however, of the manufactures, somewhat similar to the investigations of Switzerland, was taken in 1871. This covered all the manufacturing establishments in which the hours of work were regulated by any act of Parliament from 1833 to 1867.<sup>1</sup> The inquiries to be answered by the industrial persons referred to the number of workers by sex and age, the number and power of water and steam motors used, the number and kind of machines, etc. The particulars are thought to have been incomplete, owing to the difficulty of collection. The investigations of the conditions of manufactures undertaken in the following decades had, like those preceding the one of 1871,<sup>2</sup> a more or less limited scope, that of 1889–90 being the most complete. They were made in response to parliamentary calls at different times for returns in regard to some particular topic. A change in these conditions occurred only when, in a letter of March 19, 1894, to the secretary of state, the factory statistics committee recommended that—

<sup>1</sup> Factories and Workshops, Return of the number of manufacturing establishments in the United Kingdom in which the hours of work were regulated by any act of Parliament from 1833 to 1867; and of persons employed therein. London, 1872.

<sup>2</sup> Cf. Factories and Workshops, Annual Report of the Chief Inspector of Factories and Workshops for the year 1896, page 135f. London, 1897.

Following the precedent of section 33 of the coal mines regulation act, 1887, occupants of factories should be required to send annually to the secretary of state a return giving the number of persons employed and the nature and amount of power in use.

The reason why the factory statistics committee thought the method of annual returns from the factory occupants preferable to the former method of special investigations were given as follows:

The information as to persons employed and machinery in use has actually been obtained on various occasions by means of parliamentary return, e. g., P. P. No. 328 of 1890, but the committee are impressed with the fact, of which they have convinced themselves by inquiry, that these returns fall far short of accuracy, largely owing to the absence of any statutory obligation on occupiers of factories to furnish the information. The committee attaches a special value to the rendering of such a return, annually. Occupiers will grow familiar with it, its accuracy will become greater year by year, and the information thus made available will enable the results of one year to be readily compared with those of another, or the statistics relating to factories with those relating to mines.

They think it better to have a complete system in regular working order than to depend on the spasmodic efforts consequent on a sudden demand for a parliamentary return.

As a consequence of this request, the following section was included in the factory act of 1895:

The occupier of every factory and workshop shall, on or before the 1st day of March in every year, send to the inspector of the district on behalf of the secretary of state a correct return, specifying, with respect to the year ending on the preceding 31st day of December, the number of persons employed in the factory or workshop, with such particulars as to the age and sex of the person employed, as the secretary of state may direct, and in default of complying with this section shall be liable to a fine not exceeding £10.

The first year to which this new requirement applied was that ending December 31, 1895. The methods followed in this and the two following years may be given briefly here.<sup>3</sup>

Applications for returns were made by post to the occupiers of the factories and workshops which appeared on the registers. Second applications were made to a very large proportion. For the returns referring to the years 1895 and 1896 the inspectors personally made third applications to delinquents. This, however, caused them an expenditure of time seriously prejudicial to the performance of ordinary duties. For the returns of 1897, then, in place of any third attempt, the reports for the previous year were utilized in the case of firms failing to report, except where there was a reason to believe that there was a cessation of operation. The chief inspector of factories and workshops considered that "for practical purposes the result is probably much the same as if the collection of the relatively few outstanding papers had again been undertaken by the inspectors."

The applications made to separate works or departments for returns covering the year 1895 amounted to 178,000; for 1896, to close upon 200,000; for 1897, to more than 220,000. Second applications were sent for

<sup>3</sup> Sources used: Factories and Workshops, Annual Report of the Chief Inspector of Factories and Workshops for the year 1896, London, 1897; idem, 1897. London, 1899.

1895 to more than 30,000 occupiers; for 1896, to 62,491; for 1897, to 65,000. Third applications were made for 1895 to more than 20,000; for 1896, to more than 24,000; for 1897, to none, for the reasons already stated, although as in the preceding years many firms remained still unreported after the second application. After the third applications 3,308 returns remained outstanding for 1895 and 7,555 for 1896. In view of this unsatisfactory result, proceedings were taken against several occupiers for failure to make the returns for the year 1897; but in spite of this, and notwithstanding the recourse to the 1896 returns for the unsuccessful second applications, there were still 6,167 left to be reckoned as outstanding for 1897.

Besides these registered factories and workshops from which returns were not received all those unregistered and undiscovered by the inspectors were omitted in these investigations. Altogether the workshop statistics seem to have been far less complete than those of factories, partly on account of the omissions in the registers, partly by reason of the frequent difficulty in securing from the occupiers of small workshops accurate and clear statements.

Commenting on the lack of information concerning the resources, industries, and products of the United Kingdom, the Fortnightly Review in a recent issue states:

We have got the volume of our foreign trade and details more or less classified, but no statistics at all reliable as to our home industry. This fact becomes of more importance when we recollect the many deficiencies in our information with regard to our colonies and dependencies, some of which may be briefly enumerated.

#### A FEW OF THE SHORTCOMINGS.

1. There is no common statistical method within the British Empire.
2. There is no common statistical year.
3. There is no annual report of the trade of the Empire.
4. There is no yearbook of the trade of the South African Customs Union. There is no common report of the trade of the West Indies. There is no common system for India, the Straits Settlements, and the other Asiatic possessions of Great Britain. The information as to the Crown colonies is very deficient and lacking in uniformity. The information as to the Dominion of Canada and the commonwealth of Australia has much improved, but there is still room for amendment.
5. There is no reliable criterion of trade and production, and no means of establishing satisfactory comparisons as to the productive power of the several states of the Empire.
6. Even such statistics as we have are difficult to understand, because it is not customary to prefix a note explaining the system of valuation, of registration, of origin and destination, inclusive and exclusive of transshipment and transit trade, bullion and specie, bunker coal, etc.

The following act provides for a census of production in 1908 and subsequently:

[6 Edw. 7] *Census of Production Act, 1906.* [CH. 49.]

#### CHAPTER 49.

Be it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. A census of production shall be taken in the year one thousand nine hundred and eight, and subsequently at such intervals as may be determined by an order made by the board of trade, as soon as practicable after the taking of the first census and laid before Parliament.

2. (1) The board of trade shall superintend the taking of the census, and shall, subject to the provisions of this act, prepare and issue such forms and instructions as they deem necessary for the taking of the census.

(2) The expenses incurred, with the approval of the treasury, for the purpose of the census shall be paid out of money provided by Parliament.

3. (1) Forms shall be prepared for the purpose of being filled up by the persons specified in the schedule to this act with such of the following particulars in respect of the calendar year next preceding the date of the census or any prescribed part of that year as may be prescribed; that is to say, the nature of the trade or business and particulars relating to the output, the number of days on which work was carried on, the number of persons employed, and the power used or generated, and relating to such other matters of a like nature, except the amount of wages, as may be found to be necessary for the purpose of enabling the quantity and value of production to be ascertained: *Provided, That—*

(a) If in any case it is found inconvenient to furnish such particulars as respects the calendar year, the board of trade may allow the particulars to be furnished as respects some other period of twelve months or prescribed part thereof;

(b) In order to enable the board of trade to compile, as far as practicable, statistics of the net value of production without duplication, the prescribed particulars as to output may include particulars as to the aggregate estimated value of the materials used and the total amount paid to contractors for work given out to them; and

(c) Particulars as to the quantity of output shall not be required except in the case of articles the quantity of which is on their importation into or exportation from the United Kingdom required by the official import or export list to be entered, nor shall such particulars be required in greater detail than in those lists.

(2) It shall be the duty of every person specified in the schedule to this act upon receiving notice in writing from the board of trade to that effect to fill up, and sign, and to deliver in such manner as may be prescribed, on or before the prescribed date, such date not to be less than three months after the issue of the forms, the form appropriate to his trade or business.

(3) The board of trade shall issue to every person required to make a return under this act the form to be filled up by him.

4. As soon as practicable after any census is complete the board of trade shall present to Parliament a report of their proceedings under this act, and a summary of the statistics compiled from the returns under this act, and from such other information as the board are able to obtain, such summary shall include a separate statement of the statistics obtained in Ireland, and a similar separate statement for Scotland.

5. (1) The secretary of state may, as respects any factory, workshop, mine, or quarry, issue and collect any of the forms under this act by arrangement with the board of trade, and in such case shall have the same powers and duties for the purpose as are by this act conferred on the board of trade: *Provided, That* the board of trade shall not transfer its powers to make rules under section eight.

(2) The secretary of state may, if he thinks fit, by arrangement with the board of trade, cause any statistical returns, which under any other enactment he is authorized to obtain with respect to factories, workshops, mines, or quarries, to be collected at the same time, and, if convenient, on the same forms as returns under this act.

6. (1) No individual return, and no part of an individual return, made, and no answer to any question put, for the purposes of this act shall, without the previous consent in writing of the owner for the time being of the undertaking in relation to which the return or answer was made or given, be published, nor, except for the purposes of a prosecution under this act, shall any person not engaged in

connection with the census be permitted to see any such individual return or any such part of an individual return, and every person engaged in connection with the census shall be required to make a declaration in the prescribed form that he will not disclose or, except for the purposes of this act, make use of the contents of any such individual return or any such part of an individual return, or any such answer as aforesaid, and any person who knowingly acts in contravention of any declaration which he has so made shall be guilty of a misdemeanor, and on conviction be liable to imprisonment, with or without hard labor, for a term not exceeding two years, or to a fine, or to both imprisonment and a fine.

(2) It shall be the duty of the board of trade in preparing forms, instructions, or rules under this act, to have due regard to the circumstances of various trades and industries, and in particular to the importance of avoiding the disclosure in any return of any trade secret or of trading profits, or of any other information the disclosure of which would be likely to tend to the prejudice of the person making the return.

(3) In compiling any report, summary of statistics, or other publication under this act, the board of trade shall not disclose in any manner whatever any of the particulars comprised in any individual return, or arrange them in any way which would enable any person to identify any particulars so published as being particulars relating to any individual person or business.

(4) Where it is shown to the satisfaction of the board of trade that any trade or business is carried on by any company in whole or in part by means of any one or more subsidiary companies any aggregate of two or more returns relating to the trade or business so carried on shall for the purposes of this act be treated as an individual return.

A company shall be treated as subsidiary to another company for the purposes of this provision if not less than three-fourths of its ordinary share capital is held by that other company.

(5) If any person, having possession of any information which to his knowledge has been disclosed in contravention of the provisions of this section, publishes or communicates to any other person any such information, he shall be guilty of a misdemeanor and shall on conviction be liable to imprisonment, with or without hard labor, for a term not exceeding two years, or to a fine, or to both imprisonment and a fine.

7. For the purposes of this act the exercise and performance by a local or other public authority of the powers and duties of that authority shall be treated as the trade or business of that authority.

8. The board of trade may, after consultation with the secretary of state, make rules under this act—

(a) For prescribing, either generally or as respects any particular industry or class of industries, anything which, under this act, is to be prescribed; and

(b) For exempting from the obligation to make returns under this act, either wholly or to the prescribed extent, and either unconditionally or subject to the prescribed conditions, any persons or any prescribed class of persons; and

(c) Generally for carrying this act into effect.

All rules made in pursuance of this act shall be laid before Parliament.

9. (1) The board of trade shall appoint one or more committees, including persons conversant with the conditions of and engaged in various trades and industries, for the purpose of advising them when considering the preparation of the forms and instructions necessary for the taking of the census and the making of any rules under this act, and in particular such of those rules as prescribe the details of the particulars relating to output and other matters to be filled in in the several forms.

(2) There may be paid to the members of any such committee, as part of the expenses incurred for the purpose of the census, such traveling and other allowances as the board of trade fix, with the consent of the treasury.

(3) Committees may be appointed under this section to advise the board of trade specially as regards any special forms, instruc-

tions, or rules, or generally as regards any class or classes of forms, instructions, or rules which the board may assign to them.

(4) A member of an advisory committee shall not as such be permitted to see any individual return or any part thereof or to be made acquainted with any information contained in any answer to any question put for the purposes of this act.

10. If the secretary of state so directs, the intervals at which returns are to be made under section one hundred and thirty of the factory and workshop act, 1901, may, notwithstanding anything in that section, be the same as the intervals at which a census is directed under this act to be taken.

11. Nothing in this act shall be construed as preventing the board of trade or the secretary of state from obtaining such additional statistical or other information as any person may be willing to supply, either by the insertion of additional particulars in the forms under this act or by the circulation of separate forms in any census or intercensal year: *Provided*, That such particulars, if inserted in forms under this act, shall be clearly distinguished from the particulars required under this act to be filled in.

12. If any person required to make a return under this act—

(a) Wilfully refuses or without lawful excuse neglects to fill up a form to the best of his knowledge and belief, or to sign and deliver it as required by this act; or

(b) Wilfully makes, signs, or delivers, or causes to be made, signed, or delivered, any false return in respect of any matter specified in the form; or

(c) Refuses to answer, or wilfully gives a false answer to, any question necessary for obtaining the information required to be furnished under this act

he shall for each offence be liable on conviction under the summary jurisdiction acts to a fine not exceeding ten pounds, and in the case of a continuing offence to a further fine not exceeding five pounds for each day during which the offence continues, and in respect of false returns and answers the offence shall be deemed to continue until a true return or answer has been made again.

13. This act may be cited as a Census of Production Act, 1906.

#### SCHEDULE.

##### *List of persons required to make returns.*

(a) The occupier of every factory or workshop within the meaning of the factory and workshop act, 1901.

(b) The owner, agent, or manager of every mine and quarry.

(c) Every builder, that is to say, a person, who by way of trade or business undertakes the construction or alteration of a building or any part thereof.

(d) Every person who by way of trade or business executes works of construction, alteration, or repair of railroads, tramroads, harbors, docks, canals, sewers, roads, embankments, reservoirs or wells, or of laying or altering gas or water pipes, or telegraphic, telephonic, or electric lines or works, or any other prescribed works.

(e) Every person who by way of trade or business gives out work to be done elsewhere than on his own premises.

(f) Every person carrying on any other trade or business which may be prescribed.

#### THE INVESTIGATIONS OF THE REMAINING COUNTRIES.

No general industrial census has yet been taken in Norway. But in the last decades investigations of the factories have regularly been made about every five years.<sup>1</sup> At the last investigation not only the factories proper were considered as manufacturing concerns, but

<sup>1</sup> The last published investigation referred to December 31, 1895, Norges Officielle Statistik. Tredie Række No. 305. Statistik over Norges Fabriksanlæg ved Udgangen af Aaret 1895. Udgiven af det statistiske Central Bureau. The analogous publication referring to the year 1895 contains a summary of the earlier industrial investigations in Norway.

every industrial concern which was conducted in a factory-like manner and on a large scale. Concerns which, according to the general opinion were regarded as handicrafts, were not to be included. With regard to the concerns which are referred to, sometimes as factories and sometimes as handicraft enterprises, according as they are conducted on a larger or a smaller scale (for instance, tanneries, dye houses, potteries, workshops, etc.), the following points were to be taken into consideration: Whether steam or another mechanical motive power was used, whether the manufacture covered essentially one special branch, whether the concern was operated with a view to storing the product, whether the product was sent to other places, or whether it was restricted to the local consumption. Only establishments were to be considered, however, which employed at least three workers. Sawmills and flour mills, at which during the total year there were less than 300 labor days, were not included. Establishments which belonged to the mining and smelting business were also excluded. The same was true for stone pits, boat builders' concerns, dairy farms, and cheese making concerns. In the absence of a clear definition of the concerns to be included the authorities made different interpretations in regard to some of the concerns which in general are considered as handicrafts. The central bureau then had to reconstruct the unit.

The material for the investigation was secured in connection with the quinquennial reports of the head officials of the counties (*Amtmaendenes Femaarsberetninger*). The statements were entered on special schedules, one for each industry carried on in an establishment. They were, as a rule, filled out by the proprietor or manager. The inquiries included: (1) Name and kind of industry; (2) ownership of the concern; (3) year of the foundation; (4) average number of persons by sex, by position (owners, etc., accounting personnel, foremen, workers, apprentices, etc.), and by age (over and under 18 years), who are occupied during the period of operation; (5) number of workers by sex by different periods of the year; (6) number of weeks of operation in the preceding year; (7) total number of days of labor of the workers, etc.; (8) participation of the proprietor in the work; (9) motive power, whether steam, water, wind, electricity, gas, or hot air.

The industrial statistics of Sweden are based upon data secured under the direction of the board of commerce (*Kommers Kollegium*), and published in its annual reports.<sup>1</sup> The returns covering the manufactures and handicrafts refer, with regard to the factories, to the owners by sex and by ownership (indi-

vidual, joint-stock companies, state or commune, others) and to the average number of workers during the period of operation by sex and age (over and under 18 years); to the quantity and selling value of the products; to the net proceeds according to estimates of the official estimators; to the kind and power of motors and to the machinery; finally to the accidents which occurred in the factories. With regard to the enterprises conducted like handicrafts, the returns refer to the number of masters and helpers by sex, and to the net proceeds according to the estimates of the official estimators. Different concerns belonging to the same owner and combined in one establishment were treated separately.

Italy began in 1883 a detailed investigation of factories which has now been completed.<sup>2</sup> The returns do not refer to the same date but vary for the 68 provinces within the period from 1883 to 1898. The inquiries for all the factories related to the number of workers, their age, and the average number of labor days per year; to the motors and to the steam boilers, by kind and power. In addition to this special statement, statements varying according to the particularities of the different industries were secured through special schedules.

In Russia the industrial statistics are mainly based upon the annual publications of the office for commerce and industry, and are intended to cover the factories only. Establishments producing goods in value less than 1,000 rubles (\$515) are not considered. In the last reports, however, all mills producing less than 10,000 rubles (\$5,150) were excluded. Not only the principles governing the inclusion or exclusion of establishments, but also the completeness of the returns, seem not to be the same in every year. The returns are exclusively based on the statements of the manufacturers themselves, who are believed, on the whole, to have understated the extent of their business and the number of laborers.

Finally, Portugal<sup>3</sup> has at different times made investigations of its factories.

No other country has ever taken any industrial censuses or made similar comprehensive industrial investigations.

<sup>2</sup> The results have been published in single volumes for each province in: *Ministro di Agricoltura, Industria e Commercio. Direzione generale della Statistica. Annali di Statistica. Serie IV. Statistica Industriale Roma, 1885-1900.* A second edition partly brought up to date was published for the four provinces of Piedmont in 1892 and for the eight provinces of Lombardy in 1900. Finally five single industries have so far been treated separately for the whole country.

<sup>3</sup> The last investigation of the kind is: *Ministerio das Obras Publicas, Commercio Industria. Repartição de Estatística Direcção do commercio e industria. Inquerito industrial, de 1890.* Lisbon, 1891. 5 vols. A review of the earlier industrial investigation is contained in the corresponding publication referring to the conditions in the year 1881: *Resumo do inquerito industrial de 1881.* Lisbon, 1883.

<sup>1</sup> *Bidrag till Sveriges officielle Statistik. D. Fabriker och Handverk. Kommerskollegii underdaniga Berættelse (Stockholm).* (The last report, issued in 1900, refers to the year 1898.)

## CHAPTER XVII.

### DESCRIPTION OF GENERAL TABLES.

TABLE 1.

*Comparative summary, by specified industries: 1905, 1900, 1890, and 1880.*—In this table are presented the number of establishments; total capital; number of salaried officials, clerks, etc., and salaries; average number of wage-earners; total wages; average number of men, of women, and of children; miscellaneous expenses, cost of materials used, and value of products reported for each specified industry in the United States at each of the last four censuses. Hand trades and neighborhood industries have been omitted, but custom grist and saw mills and other neighborhood industries, reported as a part of factory industries in 1880 and 1890, are included in the figures for these years. In order that similar industries reported at the different censuses may be comparative, combinations have been made in names of classifications and in the statistics, while certain of the new classifications have been absorbed in the older ones from which they were taken. The totals for some industries at the census of 1905 shown in this table will not, therefore, agree with totals for industries of the same names in other tables, and classifications not shown in Table 1 will appear. For example, the total for "foundry and machine shop products" in this table includes establishments classed in other tables as "locomotives," and "stoves and furnaces, not including gas and oil stoves," as given in Tables 3, 5, 9, and 11, and also in the tables by specified industries for each state or territory in Part II and in the tables of special reports. "Iron and steel, blast furnaces" and "iron and steel, steel works and rolling mills" are combined. "Marble and stone work" includes "artificial stone." "Lime," "cement," and "gypsum wall plaster" appear as "lime and cement." "Cheese, butter, and condensed milk" includes establishments classed in the other tables as "cheese," "butter," and "condensed milk." "Shipbuilding" includes establishments classed as "ship and boat building, wooden" and "shipbuilding, iron and steel."

A comparison similar to that shown in Table 1 for 1900 and 1905 for the industries of the country as a whole is made for the leading industries of each state and some of the territories in the reports for the respective states and the territories in Part II. In consid-

ering the figures given in Table 1 and in the tables for the different states and territories in Part II, reference should be made to the remarks concerning comparisons on pages xxxiii and xxxiv of this report.

TABLE 2.

*Comparative summary, by states and territories: 1905 and 1900.*—This table is a comparative summary of all industries for the states and territories, 1900 and 1905.

TABLE 3.

*United States, by specified industries and groups of industries: 1905.*—Statistics of manufactures, by specified industries for the United States, are shown in this table in greater detail than in Table 1. They are arranged in 14 groups, according to the character of raw materials or uses of products, as explained on page cxxiv. The table presents number of establishments; capital, divided into the various items; power—number of establishments and total horsepower; proprietors and firm members; salaried officials, clerks, etc., with their number and salaries; greatest and least number of wage-earners; total average number of wage-earners and total wages, with average number of men, women, and children, and wages for each class; miscellaneous expenses, divided into the various items and including contract work; cost of materials used—aggregate materials, purchased in raw state and partially manufactured form, including all other materials; fuel; rent of power and heat; mill supplies; freight; value of products; average number of wage-earners employed during each month—men, women, and children.

TABLE 4.

*Manufactures, by states and territories: 1905.*—This table presents for each state and territory totals for the same items as those shown in Table 3 for specified industries.

TABLE 5.

*Specified industries, by states and territories: 1905.*—In this table are presented for the industries, by states and territories, the same items shown in Table 3 for the industries by groups and in Table 4 for the several

states and territories, except that it does not give the average number of wage-earners employed during each month. The statistics for each industry correspond with those given for the same industry in Table 3. States or territories represented by only one or two establishments are included in "all other states," to avoid disclosing the operations of individual establishments.

TABLE 6.

*Groups of industries, by states and territories: 1905.*—The statistics for the 14 groups of industries, by states and territories in 1905, are given in this table in condensed form.

TABLE 7.

*States and territories, by groups of industries: 1905.*—This table gives a condensed summary for each state and territory by groups of industries.

TABLE 8.

*Summary for establishments in states and territories, by character of ownership, with per cent in each class: 1905.*—In this table is given the total number of establishments under each form of ownership—individual, firm, incorporated company, and "miscellaneous"—by states and territories and for the United States, with the percentage that each kind is of the total for each state and for the United States. The total amount of capital, total average number of wage-earners, total wages, total miscellaneous expenses, total cost of materials used, and total value of products are also given, with the percentage that each of these is of the total for each of the states and territories and of the total for the United States.

TABLE 9.

*Establishments and products, grouped by character of ownership, by specified industries and groups of industries: 1905.*—This table gives by specified industries and groups the value of products according to character of ownership of the establishments producing them, whether individual, firm, incorporated company, or "miscellaneous." The number of establishments under each form is also shown by each group of industries and by each of the specified industries in the group. The groups are arranged as in Table 3.

TABLE 10.

*Summary for establishments in states and territories, by value of products, with per cent in each class: 1905.*—This table is a summary for establishments in each state and territory, by the value of products as reported at the census of 1905, with the percentages that the totals for each class are of the corresponding totals

for the state or territory. The table shows the number of establishments, capital, wage-earners, wages, miscellaneous expenses, cost of materials, and value of products for the establishments, separated into five groups: (1) Establishments with a product of less than \$5,000; (2) establishments with a product of \$5,000 but less than \$20,000; (3) establishments with a product of \$20,000 but less than \$100,000; (4) establishments with a product of \$100,000 but less than \$1,000,000; (5) establishments with a product of \$1,000,000 and over.

TABLE 11.

*Establishments and products, grouped by value of products, by specified industries and groups of industries: 1905.*—This table gives, in the same way that Table 9 does for character of ownership, the totals for the United States according to specified values of products, by groups and for each industry within the group. In this, as in other tables, values have been omitted wherever they would have disclosed the products of individual establishments.

TABLE 12.

*Motive power, by states and territories: 1905.*—The total number of establishments in the United States and in each state and territory and the number reporting power are given in this table, with the total horsepower reported. The different kinds of engines and other motors with their horsepower—steam, gas and gasoline, water wheels, water motors, electric motors, and other kind—are given as owned, and the electric and other kind of horsepower reported as rented. Comparative tables of power in Part II should be referred to in connection with this table.

TABLE 13.

*Motive power, by specified industries and groups of industries: 1905.*—This table gives in the same detail as Table 12 the amount of power, by specified industries and groups of industries, for the United States.

TABLE 14.

*Motive power for industries showing 50,000 horsepower and over, by states and territories: 1905.*—In this table motive power is shown in the same detail as in Tables 12 and 13 for industries reporting 50,000 horsepower and over. The arrangement is by states and territories. The industries are 43 in number.

TABLE 15.

*Establishments grouped according to number of wage-earners and time in operation, by states and territories: 1905.*—This table gives, by states and territories, the total number of establishments reporting, the estab-

lishments reporting no wage-earners, and those reporting from under 5 to over 1,000, this in each case being the greatest number employed at any one time. Establishments are also grouped by days in operation, from 30 days and less up to 366.

TABLE 16.

*Establishments grouped according to number of wage-earners and time in operation, by specified industries and groups of industries: 1905.*—The same kind of

information is presented in this table as in Table 15, arranged according to groups of industries and for specified industries in each group.

TABLE 17.

*Comparative summary for 544 municipalities having a population in 1900 of at least 8,000: 1905 and 1900.*—This table gives condensed statistics for 544 municipalities, having a population in 1900 of at least 8,000, for both 1900 and 1905.